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Delayed and Non-Union in Fractures

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Forty-five cases of delayed and ununited fractures of the long bones have been analyzed, excluding fractures of the neck of the femur. These have all been treated by the Orthopaedic Department of the Crippled Children's and State University Hospitals from June, 1927, to June, 1938. There were 22 cases of delayed union and 23 cases of non-union.

This series has been divided into several groups depending upon whether union has been delayed or failed. Further subdivision is based on the long bone involved.

No deaths have occurred in this series following surgery.

The use of autogenous bone grafts as an aid in obtaining union of fractures of the long bones which delay or fail to unite has been known since 1809, when Merrem obtained successful healing of bone plates in the skull after trephining. In 1858 Ollier, after extensive investigation in the use of the bone graft in animals and man concluded that fresh bony tissue covered with periosteum remained viable. General Henri Dealgeniere of LeMans, France, used osteoperiosteal grafts in 1905.

Successful bone grafts must fulfill certain desiderata. (1) Act as a stimulus to osteogenesis; (2) provide mechanical splinting; (3) the blood supply about the graft must be good; (4) there must be no stress on the graft; (5) the deformity must have been previously corrected and the graft must be of ample size; (6) no active bone or soft tissue infection should be present.

1.—DELAYED UNION

Tibia—There were 10 patients in this group, all males. Their ages ranged from 11 to 68 years. In seven cases the tibia and the fibula were fractured and in three cases the tibia alone. Two were compound fractures, one of which was comminuted. Five of the cases were the result of car or motorcycle accidents, two were due to falls, and only three were attributed to direct violence. The site of the fractures were as follows: two were in the distal third, four in the middle third, and three at the junction of the lower and middle thirds.

The interval between the time of accident and operation varied from nine to 27½ weeks.

The type of grafts employed in the operative treatment were: Albee sliding inlay, five; tibial inlay, two; osteoperiosteal split graft,* one; intramedullary, one; massive onlay, one. An osteoperiosteal graft was also added as an adjunct to one of the tibial inlay grafts.

Fixation of the sliding inlay grafts was with autogenous bone pegs in the first case, and with chromic catgut in the second, third, fourth and fifth cases. Autogenous pegs were also used to make the massive onlay graft secure.

Eighteen weeks was the average period of immobilization for seven cases. The results of five sliding inlay grafts were as follows: the first three patients obtained

*Medial cortices split longitudinally 2-3" proximal and distal to the fracture and graft inserted into diamond-shaped defect.

solid union clinically and by X-ray in 17, 20 and 20½ weeks respectively. Two of the end-results could not be determined, but evidence of callous in the fourth was present by X-ray five weeks post-operatively. The patient obtaining solid union in 20 weeks to date has a normal extremity with the exception of slight posterior bowing resulting in one inch of shortening. In the sixth case, an inlay graft was successful, union being present clinically and by X-ray in 12 weeks, but the inlay graft used in another (No. 7) was a failure. Definite X-ray evidence of bony union of the fracture in which the osteoperiosteal split graft (No. 8) was employed appeared in 20 weeks. To date this patient has a normal extremity. Solid bony union following the intramedullary graft (No. 9) was obtained clinically and by X-ray in 13 weeks. Clinical solid bony union was present in 10 weeks with the massive onlay graft (No. 10).

Humerus—Five patients were in this group, their ages ranging from 23 to 45 years. One was a compound fracture. All five resulted from automobile accidents. The site of the fractures were: (1) in the middle third, and (2) at the junction of the middle and distal thirds of the femur. The interval between the time of accident and operation varied from eight to 22 weeks.

Massive onlay grafts were used in all five patients. Autogenous pegs and chromic catgut were used to obtain fixation of the grafts in the first four cases, and beef bone screws were used in the fifth one.

Three of the patients developed a radial palsy following surgery. Two of these patients recovered, one a few weeks later, the other 13 months after operation. The period of immobilization varied from 14 to 40 weeks. Solid union of the first two fractures was present clinically and by X-ray in 18½ and 30 weeks respectively. Firm clinical union was present in one (No. 3) in 56 weeks and in another, (No. 4) in 14 weeks. The end-result of the fifth case could not be determined but beginning callous formation by X-ray was present 20 weeks post-operatively.

Femur—This group is comprised of three cases. The ages of the patients were 19, 45 and 46 years. All were simple fractures and all obtained union. The time interval between accident and operation was nine, 16 and 24 weeks respectively.

Two of the fractures occurred as the result of violence. The youngest patient was in a motorcycle accident on June 15, 1934, sustaining a fracture which subsequently united in poor position. An osteotomy was later done, and skeletal traction applied correcting three inches of overriding plus anterolateral bowing.

Two fractures were in the middle third and one involved the distal third of the femur. An intramedullary graft was used in each case and osteoperiosteal grafts were also placed about the fracture site in the middle aged patients (Nos. 2 and 3).

The average period of immobilization was about 18 weeks. Slight drainage from one operative wound occurred. Satisfactory unions were obtained in all three cases.

Ulna—E.M.S., white, male, age 39, was in a car accident August 15, 1935, receiving a compound fracture of both bones of the left forearm. The radius alone united. The fracture of the upper third of the ulna was bone-grafted 19 weeks after the accident using an intramedullary graft. In addition, two osteoperiosteal grafts were laid across the fracture site and fixed with chromic catgut. Immobilization was continued for 20 weeks, at the end of which time no union was present, clinically or by X-ray. Any further record is unavailable.

Radius—This group consisted of two patients whose ages were eight and 24 years. In both patients the radius and ulna were fractured. The eight-year-old boy had fractured both bones of the forearm several times previously, suggesting a localized nutritional disturbance. The site of the fractures were: in the boy's case middle third of the radius, and in the adult's case the junction of the middle and distal thirds. The interval between the time of accident and operation for the boy was 10½ weeks, and for the adult 16 weeks.

An osteoperiosteal graft was used in the youngster and fixed with chromic catgut. The period of immobilization was eight weeks after which solid clinical union occurred. There was definite X-ray evidence of bony union six weeks post-operatively. In the second case a massive onlay graft was employed using autogenous pegs plus chromic catgut for fixation. Almost

solid union was present by X-ray in 27 weeks and this patient now has a perfectly normal extremity.

Clavicle—One case, B.D., a white male, age 37, fell and obtained a simple fracture of the outer third of the clavicle on February 13, 1935. Ten weeks later a massive onlay graft was applied and fixation obtained by autogenous pegs plus chromic catgut. Shoulder immobilized for eight weeks after which there was solid union clinically and by X-ray.

2—Non-Union

Tibia — Nine patients comprise this group, seven of whom are males. Their ages range from nine to 52 years. Both bones were fractured in seven cases and three were compound. The causes of the fractures were variable. Four resulted from car accidents, three were due to falls, one was due to direct violence and the cause was not stated in the record of one case. The site of the fractures were: (2) distal third, (2) middle third, (4) junction of middle and distal thirds, (1) junction of middle and proximal thirds. The time interval between time of accident and operation ranged from 35 to 163 weeks. In this series there were four sliding Albee inlay grafts, three tibial inlay grafts, one osteoperiosteal "split" graft, and one osteoperiosteal inlay graft. Fixation of the grafts consisted of chromic catgut in nine cases and autogenous pegs were the means of fixation with the osteoperiosteal "split" graft.

Eight cases were immobilized for eight, 11, 13, 20, 29, 31, 31, 33, and 48 weeks respectively. The record is incomplete in one case. Osteomyelitis of the tibia subsequently developed in each of the three compound fracture cases (Nos. 1, 7 and 8). An exacerbation of the infectious process occurred in two of these patients following surgery and necessitated the removal of a small sequestra in one (No. 7), and an incision and drainage of an abscess in the other (No. 8).

Satisfactory unions were obtained in all cases. The results of the sliding Albee inlay grafts were as follows: the first patient obtained solid union clinically and by X-ray in 18 weeks. The second, solid union clinically and by X-ray in 16 weeks and to date this patient has good function of the extremity although there is ¾ inch shortening and slight posterior bowing. Another (No. 3) disclosed solid bony union by X-ray in 65 weeks. The fourth case, a 17-year-old boy, operated on a few months ago has at present good union clinically and by X-ray. The length and contour of his extremity is normal. The three patients (Nos. 5, 6 and 7), in whom inlay tibial grafts were used, obtained solid union clinically and by X-ray in 24, 29 and 48 weeks respectively. The patient immobilizd for 48 weeks had a compound fracture. In the last two cases (Nos. 8 and 9) solid union occurred clinically and by X-ray in 50 weeks using an osteoperiosteal "split" graft and in eight weeks with an osteoperiosteal graft.

Humerus—There were seven patients in this group, six were white males, one a negro male. Their ages were from 17 to 51 years. Three were compound fractures resulting from gun-shot injuries and one compound fracture was comminuted. Two patients (Nos. 1 and 3) had open reductions and Lane plates were applied but one plate had to be removed five weeks later because of a soft tissue infection.

The time intervals between the accident and the operation were 28½, 36, 40, 47, 56, 72 and 75 weeks. The sites of the fractures were: (3) in the distal third, (1) at the junction of the distal and middle thirds, and (2) in the middle third. The period of immobilization varied from 14 to 44 weeks in six of the cases. The type of grafts applied were massive onlay (5), osteoperiosteal (1), intramedullary combined with osteoperiosteal (2), onlay intramedullary (1). In the non-unions resulting from gun-shot injuries, a massive onlay was used in one patient (No. 4) and intramedullary grafts were employed in the other two cases (Nos. 5 and 6). The latter was supplemented by osteoperiosteal grafts.

One patient developed a radial palsy following surgery. In the first two patients autogenous pegs were used to secure fixation of the massive onlay grafts and in the third case they were used in both the first and second grafts. In the fourth case the first graft was fixed with beef bone screws and the second with chromic catgut. In cases Nos. 5, 6 and 7, fixation was with chromic catgut.

It is not known if union was obtained in the first case as the record is incomplete,

but fair union by X-ray was present 10 months post-operatively in the second case. Massive onlay grafts were used in the above two patients. The onlay graft employed in the fracture of the upper third of the humerus, case No. 3, was a failure and an onlay intramedullary graft used in a subsequent operation also proved unsuccessful. The fourth case, in whom a massive onlay graft had been unsuccessful, has to date, fair union by X-ray nine weeks after application of a second massive onlay graft. The fifth and sixth cases, in whom combined intramedullary and osteoperiosteal grafts were used obtained good bony union clinically and by X-ray in 16 and 37½ weeks respectively. An osteoperiosteal graft used in the last case, No. 7, resulted in abundant callous formation in 14 weeks.

Femur—This group is composed of two cases, a white male, age 53, and a white female, age 17. The male had a simple fracture of the middle third of the femur and the female a compound fracture in the same location. Osteomyelitis developed in the compound fracture which had been reduced by open operation one month after injury. The interval between the automobile accidents and operation was 41 months for the male and 42½ months for the female.

A massive cortical intramedullary graft and an osteoperiosteal graft were used in the compound fracture case. The simple fracture was treated with a massive onlay graft and fixed with autogenous pegs. Post-operative X-rays showed that the bone pegs had pulled loose from the shaft of the femur.

Solid clinical union occurred in 29 weeks in the 17-year-old patient and a re-check revealed solid union and good alignment one year and 11 months later.

The massive onlay graft was a failure and to date there is typical pseudo-arthrosis at the fracture site with three inches of shortening.

Ulna—Five patients comprise this group. The ages range from two to 37 years. The cause of injury varied from falls to fistic encounters. Three were compound fracture cases. One non-union, case No. 2, was the result of a two-inch subperiosteal resection of the shaft for an osteomyelitic infection. The fracture sites were as follows: (1) the middle third, (2) the junction of the proximal and middle thirds, (2) the proximal thirds. The time intervals between the accident and operation were from seven to 45 months. The types of grafts used were massive onlay (3), "split" inlay (1), onlay intramedullary (1). The latter was used in the fracture at the junction of the upper and middle thirds (No. 5). Fixation of the massive onlay grafts were by means of autogenous pegs in three of the cases (Nos. 1, 2 and 3), and chromic catgut in the remaining two cases.

Two of the patients (Nos. 4 and 5) had previously had bone graft operations for delayed union. The fourth patient whose fracture had been a compound one developed osteomyelitis.

The period of immobilization averaged 14.6 weeks. Fracture of one massive onlay graft occurred. All grafts were successful with the exception of the sliding inlay graft (No. 4), which was employed in one of the two fractures occurring at the junction of the middle and proximal thirds. This patient had previously had a massive onlay graft applied to the fracture site 10 weeks following injury. To date he has a typical pseudo-arthrosis at the fracture site with limitation of supination and pronation of the forearm.

The result of the massive onlay grafts employed in the first three patients were as follows: *First case*: union present clinically and by X-ray in 24 weeks; solid clinically in 33½ weeks. To date this is not entirely satisfactory, but the result was complicated by a resection of the head of the radius for an anterior dislocation 14½ months after the original injury. There is a slight increase in the carrying angle, supination is one-quarter normal, pronation is completely absent, relationship of radius to ulna at wrist joint is altered and in addition he complains of pain along the radial side of the forearm on voluntary motion. *Second case*: clinically solid five months post-operatively with moderate callous on X-ray. *Third case*: solid clinical union seven weeks post-operatively. This last patient to date has solid union clinically and by X-ray. The contour of the arm is normal, but function of the forearm as yet is not perfect due to slight limitation of pronation and supination.

The massive onlay intramedullary graft

TABLE OF DELAYED UNIONS

TIBIA

Case No.	Type of Graft	Result	Complications	Interval Between Inj. & Op.	Period of Immobilization
1.	Sliding Albee Graft	Good union clin. & by X-ray in 17 wks.	None	20½ wks.	18½ wks.
2.	Sliding Albee Graft	Union Clin. & by X-ray in 20 wks.	None	16 wks.	9 wks.
3.	Sliding Albee Graft	Union clin. & by X-ray in 21½ wks.	None	20 wks.	15 wks.
4	Sliding Albee Graft	X-ray evidence of callous in 5 wks.	None	21½ wks.	Incomplete
5.	Sliding Albee Graft	Incomplete	None	13 wks.	Incomplete
6.	Inlay Tibial Graft	Firm clin. union in 9 wks. & solid bony union by X-ray in 12 wks.	None	15½ wks.	9 wks.
7.	Inlay Tibial and Osteoperiosteal	Failure	None	14 wks.	16 wks.
8.	Osteoperisteal "Split" Graft	Definite X-ray evidence of union in 4 mos. To date solid union.	None	13 wks.	?
9.	Intramedullary Graft	Solid bony union clin. & by X-ray in 13 wks.	None	27½ wks.	9 wks.
10.	Massive Onlay	Solid bony union clin. in 10 wks.	None	20 wks.	24 wks.

HUMERUS

1.	Massive Onlay	Solid union clin. & by X-ray in 18½ wks.	Radial palsy with comp. recovery in 13 mos.	8 wks.	14 wks.
2.	Massive Onlay	Solid union clin. & by X-ray in 30 wks.	None	8 wks.	30 wks.
3.	Massive Onlay	Fairly firm clin. union & beg. callous formation by X-ray in 32 wks. Solid clin. union in 56 wks.	Radial palsy. It is not known if recovery occurred	21 wks.	40 wks.
4.	Massive Onlay	Solid bony union clin. in 14 wks. To date has solid union clin. & by X-ray	Radial palsy with comp. recovery in a few wks.	21½ wks.	14 wks.
5.	Massive Onlay	Beginning callous formation by X-ray in 20 wks.	Incomplete	22 wks.	Incomplete

FEMUR

1.	Intramedullary Plus Osteoperiosteal	Solid union by X-ray in 23 wks.	None	24 wks.	20½ wks.
2.	Intramedullary Plus Osteoperiosteal	Solid union clin. & by X-ray in 24 wks.	Slight drainage from wound subsided in 24 wks.	16 wks.	18 wks.
3.	Intramedullary	Solid clin. union in 18 wks.; solid union by X-ray in 23 wks.	None	9 wks.	18 wks.

RADIUS

1.	Osteoperiosteal Onlay	Definite X-ray evidence of union in 6 wks. & of solid clin. union in 8 wks.	None	10½ wks.	8 wks.
2.	Massive Onlay	Almost solid union by X-ray in 27 wks.	None	16 wks.	Incomplete

CLAVICLE

1.	Massive Onlay	Union present clin. & by X-ray in 8 wks.	None	10 wks.	8 wks.

TABLE OF NON-UNIONS

TIBIA

Case No.	Type of Graft	Result	Complications	Interval Between Inj. & Op.	Period of Immobilization
1.	Albee Sliding Inlay	Solid bony union clin. & by X-ray in 18 wks.	None	48 wks.	18 wks.
2.	Albee Sliding Inlay	Good bony union clin. & by X-ray in 16 wks.	None	48 wks.	11 wks.
3.	Albee Sliding Inlay and Osteoperiosteal	Solid union by X-ray in 65 wks.	None	25 wks.	31 wks.
4.	Albee Sliding Inlay	To date has good union by X-ray	None	56 wks.	20 wks.
5.	Tibial Inlay	Solid bony union clin. & by X-ray in 24 wks.	None	51½ wks.	8 wks.
6.	Tibial Inlay	Solid union clin. & by X-ray in 29 wks.	None	163 wks.	29 wks.
7.	Tibial Inlay	Solid bony union clin. & by X-ray in 48 wks.	Exacerbation of osteomyelitic infection	76 wks.	16 wks.
8.	Osteoperiosteal "Split" Graft	Solid bony union clin. & by X-ray in 50 wks.	Exacerbation of osteomyelitic infection	76 wks.	33 wks.
9.	Osteoperiosteal Onlay	Good bony union by X-ray in 8 wks.; solid bony union clin. in 15 wks.	None	35 wks.	13 wks.

HUMERUS

1.	Massive Onlay	Incomplete	Radial palsy; it is not known if recovery occurred	47 mos.	Incomplete
2.	Massive Onlay	Fair union by X-ray in 10 mos.	None	28½ wks.	Incomplete
3.	Massive Onlay 1st Operation	Failure	Autogenous pegs pulled loose from graft	49 wks.	28 wks.
	Onlay Intramedullary 2nd Operation	Failure	Graft fractured	78 wks.	24 wks.
4.	Massive Onlay 1st Operation	Failure	None	22½ wks.	44 wks.
	Massive Onlay 2nd Operation	Moderate callous by X-ray 9 wks. P.O.	None	72 wks.	In plaster to date
5.	Intramedullary Plus Osteoperiosteal	Solid union by X-ray in 16 wks.	None	36 wks.	16 wks.
6.	Intramedullary Plus Osteoperiosteal	Firm clin. union & moderate callous by X-ray in 37½ wks.	Serosanguineous drainage from wound for ½ wk.	56 wks.	37½ wks.
7.	Osteoperiosteal Onlay	Good new callous formation by X-ray 14 wks. P.O.	None	40 wks.	14 wks.

FEMUR

1.	Massive Onlay	Failure	Autogenous pegs pulled loose	42½ mos.	?
2.	Intramedullary Plus Osteoperiosteal	Solid union clin & by X-ray in 29 wks.	None	41 mos.	22 wks.

ULNA

1.	Massive Onlay	Solid clin. union in 7 wks.; to date has solid union by X-ray	None	28 wks.	11 wks.
2.	Massive Onlay	Clin. solid in 5 mos. Moderate callous by X-ray	None	20 mos.	20 wks.
3.	Massive Onlay	16 wks.—slight callous by X-rny; solid clin. union in 33½ wks.	Fracture of graft	45 mos.	26 wks.
4.	Sliding Inlay	Failure		14½ mos.	22 wks.
5.	Onlay Intramedullary	Solid union clin. & by X-ray in 46 wks.	None	24 mos.	8 wks.

(No. 5) was employed in the non-union occurring at the junction of the middle and proximal third, resulting from a gun-shot injury. Clinical union was present in six weeks, but it was 46 weeks before bony union was solid. To date this patient has a slight increase in the carrying angle. Moderate medial bowing of the forearm is present, but the function is excellent. The bone is clinically solid, but the last X-ray fails to reveal solid bony union.

SUMMARY OF DELAYED UNIONS

Tibia—Seven patients are known to have obtained union. The onlay tibial graft combined with an osteoperiosteal graft was a failure and the result could not be determined in two cases.

Humerus—Four massive onlay grafts were successful. The fifth record is incomplete.

Femur—Union was obtained in all three fractures. Intramedullary grafts were used and supplemented with osteoperiosteal grafts in two cases. One patient developed a soft tissue infection.

Radius and Ulna—The delayed unions of the radius were successfully treated with onlay grafts. Osteoperiosteal grafts across the fracture site of the ulna combined with an intramedullary graft proved unsuccessful.

Clavicle—Union of the clavicle was obtained with a massive onlay graft.

SUMMARY OF NON-UNIONS

Tibia—There are no failures in this series.

Humerus—Three cases obtained solid union and one other case fair union in 10 months. Moderate callous was present in nine weeks following a second operation in the fourth case. There was one failure and one record was incomplete.

Femur—One case obtained solid union. The massive onlay graft was a failure.

Ulna—Four cases obtained union. One sliding inlay graft failed to stimulate osteogenesis.

Hyperthermic Epidermal Destruction

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Foreword: The following paper represents a frank experiment in Form. The intent of this form is that a long paper may be read through from beginning to end rapidly and without loss of continuity by reading only the text of the "thesis." Following this form a reader might pick up any particular point in the development of an author's thesis and follow through with him to its antithesis and cited data.

For example, one point that this paper wishes to bring out is cited in the first thesis. If the reader finds the generality unconvincing, he may accept the tendered elaboration of this point under the heading of "development." If the particular point sufficiently interests him, he may pursue it further through the "argument" and still further under "data" which might cite original or experimental work, anatomy, related chemistry, or a bibliography of the literature. With due apology for imposing this unconventional form upon the reader, the author hopes that negative critical comment may be responsibly presented by letter if serious.

* * * *

THESIS

This designation is employed because it denotes a situation that must be recognized and kept in mind if it is to be treated rationally. Hyperthermic epidermal skin loss exactly describes what occurs in 90 per cent of second degree "burns and scalds."

The integument consists of non-vascular horny, protective epidermis and a thick, highly vascular dermis. In superficial burns and scalds the so-called non-scarring, or second degree burns, the non-vascular

epidermis is rendered avital by the heat of the offending agent, but the protected, underlying, thicker, highly vascular derma rarely suffers full thickness devitilization.

Development

Hyperthermic agents such as hot water, steam and the ignited gases of an explosion cool down so rapidly that full thickness "cooking" of the entire skin rarely occurs. Even in the skin damage incident to burning oils and burning clothes and other agents that do not "flash in the pan," but exert an effect over a considerable period of time, the victim will, unless unconscious, divest himself of his clothes or smother the flames and escape further and continued exposure to the burning agent. Here too, we rarely see full thickness "cooking" burns of the skin. It is usually present in those who are restrained and cannot escape and thus remain in an environment of burning material over long.

Argument

This title obviously excludes such conditions as electric burns, acid and caustic burns and those cases in which full thickness "cooking" destruction of the skin does occur. These immediately above mentioned situations present additional problems not covered in this paper.

Data

The integument may be considered under four headings:

1. The corneum.
2. The malpighian layer.
3. The derma.
4. The hypo-dermis.

The four divisions are generally present but in quite variable relationships. For the purpose of this paper we will stress the relative thickness of the derma regionally.

* * * *

THESIS

Characteristics of the derma to be signalled out are:

1. Highly vascular.
2. Contains the sensory end organs, pain, pressure, temperature, and touch.
3. Glandular structures . . . sebaceous and sudoriferous glands.
4. Hair follicles.
5. White connective tissue fibers and an abundance of elastic fibers. (This is the crux of the situation. The preservation of these white and elastic connective tissue fibers is essential to the escape from contracting scars.)
6. Lymphatics.

It is apparent from the above mentioned constituents of the derma that it is the important, truly functional layer of the skin and must be preserved. Its loss or non-loss is a differential point in the prevention of scar contracture.

Development

The corneum consists of the desicated dead, desquamating cells from the superficial layers of the Rete malpighii and its purpose is solely protective. Necessarily it is found in greatest thickness over those areas of the body which are constantly traumatized, i.e., the soles of the feet, and the palms of the hand, whereas it is very thin to absent in the more protected areas, i.e., the inter-aspects of the arms and thighs, and the abdomen.

The second division, the Rete malpighii, consists of four classical layers from without inward: the stratum lucidium, stratum granulosum, stratum spinosum, and stratum cylindricum. The report of Thuringer, who has studied the Rete malpighii relative to the percentage occurrence of mitotic figures in these four layers, indicates that mitosis is responsive to stimulation of the area, and that the percentage of occurrence for each stratum varies for different regions of the body, but the one and generally important finding shown by his work is that all cell reproduction does not occur in the stratum cylindricum and stratum spinosum, but that a goodly number of mitotic figures are discoverable in the stratum lucidium.

The basement membrane underlying the stratum cylindricum delimits the epidermis from the dermis. Note also that the epidermis from the basement membrane outward is non-vascular, and contains none of the truly functional tissues of the integument. Its sole purpose is to protect the delicate underlying functional derma from trauma (heat, pressure, and infection).

The fourth division, the hypo-dermis. consists of areolar tissue. It is the panniculus adiposus underlying the derma and

overlying the fasciae. It is not important in this paper.

Argument

It is the observation of the writer, as indicated in the opening remarks, that a large percentage of skin area involved in the majority of the usual run of "burn cases" suffers only devitalization of the epidermis. It is possible that some of the true dermis is involved, but we shall now attempt to show that the great thickness of the derma contraverts the probability of full thickness devitalization. The relationship of the thickness of the epidermis to the thickness of the dermis of the skin of the general body surface varies from one-twelfth to one-twentieth of the total thickness of the epidermis and the dermis, while in specialized tissue such as the soles of the feet and palms of the hand, the thickness of the epidermis is much greater, reaching a maximum of about one-fifth of the entire thickness. The derma in general body surface is many times the thickness of the epidermis. It is the writer's belief that this great thickness of the derma, the protection of the epidermis, the great vascularity of the derma, prevent permanent full thickness devitalization of the derma.

As permanent devitalization is rare, it is quite likely that temporary anaphylactic disfunction of the derma frequently immediately supervenes. This anaphylaxis to the physical agent heat is admittedly a loose hypothesis but is the only concept that in any way clarifies the aphysiological process presenting itself immediately after the burn. The hypothesis of a "heat anaphylaxis" explains the initial shock, the disfunction of the undestroyed derma and the marked and rapidly developing, immediately subcutaneous edema, which is in relation to loss of blood plasma from the capillaries, and is hence in relation to the blood stream concentration described by Underhill. This extraordinary blood plasma loss from the capillaries into the tissues underlying the burn is the critical problem confronting us in our thinking about the pathologic physiology and the management of severe hyperthermic epidermal destruction.

* * * *

THESIS

Proper management of "burns" demands that surgeons regard them not as entities, but as dynamic unphysiological process. Phases in this process are set out below under the following headings:

1. Stage of shock.
2. Stage of blood stream concentration.
3. Stage of maximum peripheral sensory stimulation.
4. Stage of infection.
5. Stage of repair.

The stage of shock begins immediately after the burn and progresses more or less rapidly to a peak within an hour to three hours and then may blend symptomatically into the picture of the second stage. This shock is probably the same situation we see in surgical shock and it is attended by a drop of blood pressure, increase in heart rate, and diminution of the volume of the circulating blood.

Development

Its immediate treatment is that of surgical shock and is of the same primary importance as surgical shock. Shock is the first thing to treat in the acute burn if it exists in an alarming degree. Its treatment is that of surgical shock, that is morphine, intravenous fluids, transfusions, stimulation, and cortin.

Argument

It is very important that the treatment of shock not be sacrificed to the institution of routine therapeutic measures which may be postponed until shock is controlled. It is true that in the average case shock is not a critical factor but it must be remembered that patients do die in the first few hours of shock. Fortunately, the treatment of shock is consistent with and blends into the treatment of the second stage of burns; that is the stage of blood concentration.

More recently the writer has become reoriented to the problem that the shock in burns is not surgical shock but is a manifestation of an anaphylaxis. The tenableness of this hypothesis is enhanced because it fits in with and increases our insight into the extraordinary loss of blood plasma from the capillaries into the tissues underlying the burned area. The importance and significance of plasma loss was originally little appreciated and next was eval-

uated because of the importance of the related blood stream concentration. Replacement therapy with isotonic saline and glucose soon defined the critical importance of this plasma transudation edema, for we have now repeatedly observed that although the blood concentration is corrected, the edema, the loss of blood electrolytes, the development of pulmonary and cerebral edema, and the emergency of right heart failure remained as major hazards to be overcome by direct attack upon the primary fault in the physiology of the burned victim.

It is quite clear now that the primary fault is the loss of blood plasma from the capillaries into the tissues. Recognizing this, it is the present practice of the writer not to employ isotonic intravenous solutions at all, but to employ hypertonic, intravenous solutions from the outset, and consistent with the hypothesis that "heat anaphylaxis" is responsible for the initial shock, the immediately supervening blood plasma transudation, and subcutaneous edema, ephedrine, adrenalin and large doses of adrenal cortical hormone are employed. Morphine is eschewed because it contributes to cerebral anoxemia. (Long continued cerebral anoxemia and cerebral edema are the factors responsible for the subsequent appearance of the "burned brain.") The stage of blood stream concentration is second.

Development

The stage of blood concentration is a phenomenon first observed (Underhill) in the 21 victims of the New Haven theater fire in 1923. This observer noted the marked increase in the hemoglobin of all the burned cases. This increase varied from 117 per cent to 209 per cent. Osterburg of the Mayo Clinic has reported consistent findings. The chart made of Underhill's reported case No. 13, is typical of this perversion of the normal physiology. The initial readings show hemoglobin 200, intake 3,000, urine zero on the first day. At the end of the second day the hemoglobin has dropped to 180, the intake is elevated to 5,000, and the output is elevated to 1,000. At the end of the third day the hemoglobin has dropped to 130, the intake has increased to 7,000, and the output has increased to 3,000 cubic centimeters. By the end of the fifth day, adequate physiological balance has been recovered.

Argument

The concentration of the blood is dependent upon the loss of the blood plasma into the tissues about the area burned. Everyone has noticed the striking edema developing on the second and third days. This loss of fluid from the blood stream is out of all proportion to the average normal fluid intake, and necessarily results in a marked diminution in the volume of the circulating blood with the attending kidney disfunction and accumulation of the nitrogenous waste in the blood stream. This edema is probably due to increased permeability of the capillaries about the burned areas, and according to Osterburg this loss may be as high as 70 per cent of the total blood volume. Such an uncompensated loss is obviously incompatible with life and the second stage of burns is frequently fatal. Fluids should be forced by mouth, by hypodermoclysis and intravenously until a total intake of some four to six thousand cubic centimeters per day is maintained. The efficacy of this may be checked by observation of the hemoglobin concentration. It is very probable that the importance of the extent of the burn is not so much the interference with skin function as an excretory organ and the resultant increased load forced upon the kidneys, but rather that the greater the skin area involved, the greater the area of edema, and the greater and more acute the diminution of blood volume.

* * * *

THESIS

The stage of maximum peripheral sensory stimulation runs through the first two stages and is placed third in sequence since its treatment and management is third in importance.

Development

It is not meant that these stages should be accepted as sharply defined. One or more may overlap. This designation is made to cover the management of the local lesion, that is the area of denuded dermis. Obviously the pain and temperature fibers are very superficial and are insulted by the lightest stimulation. Simple exposure to

air of the denuded dermis in the early course of the burn may cause sufficient pain to contribute to the initial shock.

The most practical management is an early and complete removal of devitalized epidermis and the application of four per cent tannic acid as a spray at intervals of 15 minutes until a suitable crust is secured. This treatment originally brought out by Davidson was originally suggested by Mason and was purposed to precipitate the split protein of the secretions of the burned areas, which were believed to be absorbed and to be the source of the toxemia.

Argument

This conception of absorption of the toxic material from the burned surface as being of primary importance in fatality of burns, has not been entirely substantiated, but the efficacy of tannic acid in the early treatment of burns has been amply substantiated, being in general use since it was first brought out by Davidson.

* * * *

THESIS

The original factor in the stage of infection is the local infection of the burned area which is characteristically due to the growth of the beta streptococcus hemolyticus. This development is almost inevitable in all large burns and is a very important consideration in the intelligent care of burns. This is the source of the general sepsis next discussed.

Development

The frequency of the development of infection under the tannic acid crusts necessitating the removal of these crusts, is one of the disappointments in its use. Recently Aldrich has suggested the use of Gentian violet in lieu of tannic acid, and he states that it has the added advantage of having an inhibiting effect on the beta-hemolytic and gamma streptococcus, which he found to be the invading organisms in all extensive burns. It is probable that either of these agencies are satisfactory as an initial measure in the treatment of the local lesion. Tannic acid has proved to be very effective and valuable in covering over the burned area in such a manner that the burn, itself, may be dismissed from consideration for a period of a few days during which time measures are carried out to combat shock, increased blood concentration, fractures, and other complicating situations requiring immediate attention.

Position of the patient at this time should be one of comfort. It is impractical to make any effort to prevent contracture at this time. In as much as possible the burned surfaces should be exposed to the air, not subjected to dependent pressure, the pressure of heavy dressings or bed clothes. A light cradle should be employed to prevent contact of the bed clothes with the burned area and to maintain body temperature. Caution when first instituted as to the number of lights and amount of heat should be observed in relation to the patient's temperature, since overheating of a dehydrated patient may contribute to a syndrome similar to sunstroke and cause death. Simple exposure of smaller areas to the air without dressing or medication, and protected by a light cradle from contacting bed clothes, may prove to be adequate treatment.

Aldrich has shown that typically the beta-hemolytic and the gamma streptococcus is the invading organism in all extensive burned surfaces and that in those cases manifesting prolonged sepsis, blood cultures frequently revealed the same organisms. The writer has observed that large burned areas which are apparently uniformly burned and treated with tannic spray, would vary in their healing. Those areas in which the tannic acid crust would remain firm and adherent to the underlying skin would heal without event and without contracting scarring; whereas those areas in which the tannic acid crusts were floated off by the underlying pus would inevitably granulate and necessitate ultimate skin grafting. It was apparent that infection was inhibiting epithelization and it later became apparent that it was causing a lysis of the skin which originally did not appear to be devitalized. The explanation of this was not clear but was originally assumed to be the lysis of the tissue by pus under any pressure. It was observed that as the infected crusts were removed early and the underlying area cleaned repeatedly, that healing would take place with a minimum of scarring. In all tissue cells, particularly in the phagocytes of the blood stream there are proteolytic and autolytic enzymes

which are freed upon the death of the cell and which are active in an acid environment.

ARGUMENT

It is the writer's present belief that in these burns the full thickness of the derma was not devitalized but was subsequently destroyed by the action of the proteolytic enzymes of the dead phagocytes; that is, the pus cells in those areas in which pus was impounded under crusts of tannic acid or other debris. It is our contention that this inevitable phase of infection should be kept in mind in the very beginning of the management of burns and every effort made to preserve the delicate, exposed derma. It has been our observation that following the early removal of tannic acid crusts and the cleaning of the surface of the derma of pus, that prompt epithelization would result if no dependent pressure was permitted to effect the derma, but that in all areas in which it was inevitable that pressure should exert itself, we observed the effect to be that of destruction of the derma and ultimate healing by scarring. (The bath, a Kirschner wire suspension are of help here.)

* * * *

THESIS

The second important factor in the stage of infection is the general sepsis which inevitably manifests itself in those cases in which large infected non-epithelizing, granulating areas are not corrected.

DEVELOPMENT

In this situation whether the blood culture be positive or not (it is impractical to await a blood culture since a positive report on a streptococcus bacteremia may not be made under three or four week's time) intravenous 5/10 per cent Gentian violet has given in some cases dramatic results. The usual septic temperature of a duration of several weeks has been seen to disappear after a single administration of 15 cc. of one-half per cent Gentian violet. Other measures important in the management of this stage are wet saline packs removed at least once daily preferably left in place over night and removed during the day time. Their application and removal carried away the surface debris of crusts and pus, and their intermittent withdrawal for a period of 12 hours permits marginal epithialization.

Certainly an essential item of treatment of this stage is frequent small blood transfusions. Few patients can be carried through the tedious weeks of the stage of infection except through the agency of multiple transfusions. Not to be overlooked is diet.

* * * *

THESIS

The stage of repair begins when, incident to the cessation of the marginal epithelization of the granulation areas, it becomes necessary to replace the lost derma, and epidermis.

DEVELOPMENT

This replacement may be accomplished by any of the numerous types of skin grafts. It is desirable to so direct and manage the earlier phases in the progress of the case that this stage will begin as early as possible and before the patient is debilitated. If due to complications or inability to control and shorten the stage of infection, the patient bcomes wasted, anemic, and septic, much difficulty will be experienced in the securing of the deep split skin from the donor site. The limbs and torso will be so emaciated, the hypodermis will be so diminished and infirm that great difficulty will be encountered in splitting the skin from the donor site. In addition to this the viability of the graft after it is secured and placed in position will be jeopardized by the inferior general constitutional condition.

The technic of the deep split graft is that of Blair and Brown. The implantation graft of Wangensteen, the small full thickness graft, the small Ollier-Thiersch graft, and other grafts consisting of transportation of small islands of epithelium to the granulating areas which stimulate epithelization and ultimately accomplish an epithelial surfacing of these areas, but are in no degree comparable in durability to the deep split graft. They should be only employed when the non-healing areas are so extensive as to leave no donor site available for split skin. Whenever donor sites are available the deep split grafts should be employed. The reason for this is apparent. Those areas repaired by the deep split graft have an underlying derma and ultimately function as full thickness skin, whereas the other types have no underlying derma and consist only of a thin,

non-resistant, epithelial surfacing over scar tissue, which of course, contracts. (Carcinomous degeneration.)

The impracticability of heterogenous and homogenous skin grafts has been so amply demonstrated, that it is only necessary to mention it. It has been our practice to place our deep split grafts not upon the granulating surfaces, but to excise such granulating surfaces with care so as to contaminate the site of removal as little as possible and place the graft directly upon the hypodermis. Thus the true relationships of the normal skin are re-established. Experience has shown that these grafts are viable on this underlying areolar tissue. However in repair of areas which will ultimately demand full thickness graft, the deep split graft may be placed as a dressing and subsequently be replaced with full thickness skin.

* * * *

DISCUSSION

F. L. Flack, M.D., Tulsa.—A knowledge of anatomy and physiology is essential in the treatment of any condition, whether disease or injury. Certainly it is important to know that the derma contains essential elements including sensory nerve filaments, white and yellow elastic connective tissue, and a good blood supply. This must be borne in mind and carefully considered in order to obtain a good functional result and avoid disabling scars.

I have so many times seen patients die from shock following extensive burns that I consider the treatment of shock to be of primary importance. The sheet anchor in the treatment is adequate doses of morphine. It may require half a grain of morphine by hypodermic. I have recently been using morphine by vein and the results have been such as to recommend its further use. One hundred cc. of 50 per cent glucose has, in my experience, been the best treatment for shock in addition to morphine. This can be used immediately and before blood transfusions can be arranged. The treatment of shock should be started immediately. The use of concentrated glucose solution has a definite effect to counteract pulmonary and cerebral oedema. I appreciate and am familiar with the fact that morphine is a medullary depressant but its value outweights the contra-indications.

There is a tremendous drop in blood chlorides in severely burned cases and these must be replaced by the introduction of sodium chloride. Make repeated tests to determine the blood chlorides.

There is some question about the absorption of toxins from a burned area. One of the ideas in the use of tannic acid was the prevention of absorption of toxins from burned proteins. It has probably been shown that a burned area does not absorb toxins and that alkaloids such as strichnine are not absorbed from a burned area. The use of five per cent tannic acid, in my hands, has been of definite value in the first aid treatment of burns, probably because it forms a protective coating over the peripheral sensory nerves which are exposed and carry a constant bombardment of stimuli to the cerebral cortex. The use of tannic acid has been so extensive and has been used in so many thousands of cases that its value has been established by competent and careful observers.

As to the treatment of infection, no one method has been so valuable in my hands as the proper application and continued use of warm moist saline dressings. I use such treatment at some stage in practically every burned case of any extent that comes under my care. The best way to remove crusts and clear up infection is by this method.

Certainly the use of the new chemical "Prontylin," is of value in some infections, and is of particular value in the infections which occur in burns.

Frequent small blood transfusions every third or fourth day have a definite value in the treatment of these patients.

Sufficient fluids must be given in order to take care of the marked blood concentration which occurs in these cases.

In regard to the use of skin grafts, it is to be remembered that the grafting of skin is the healing of epidermis or dermis taken from one place and applied to another. Of course, autogenous grafts are the only ones to be considered. Skin grafting is purely an experiment in wound healing. The point to be attained is to remove the graft to its bed before the serum has time to coagulate. The practice used years ago of floating a graft in saline solution was the worst practice possible because this

tended to remove the serum whose coagulation produced attachment. Fresh wounds heal themselves because they are presumably free from infection. Granulated surfaces must be accepted in many cases. If the granulations are young, excoriation with a piece of gauze is sufficient to produce exudate competent to take grafts. In order for grafts to grow, it is necessary for fibrin formation to take place. When the granulations have reached a certain age, in general three or four weeks, the vessels of the granular area undergo endovascular changes which make it impossible to secure a suitable serum in which to imbed grafts. In such cases these granulating surfaces must be removed by means of a knife or curet in order to secure a suitable surface. It is advisable, of course, for the bed to be smooth so that all grafts can lie evenly and have absorption and touch the grafted areas at all points. Split grafts are ideal and may be applied to muscle or fascia.

We know that the conjoined tendon does heal to Poupart's ligament. Those of us who have had to re-operate hernias have found this out. Muscle fibers themselves do not heal. Healing occurs by virtue of the connective tissue of the muscle. In instances where this is not sufficient, one must so operate as to create fibrous tissue. We know that by sewing tightly the conjoined tendon to Poupart's ligament, we produce a fibrosing myositis. The newly produced fibrous tissue forms a real fibrous union. The kind of suture is of little importance. Sutures obtained from the patient's own fascia, either in the immediate site of the wound or elsewhere, as from fascia lata, has nothing to commend it aside from saving the price of a tube of catgut. The fibrosing myositis is the essential thing. The agent used is immaterial.

Between 65,000 and 75,000 lives are lost in the United States each year as a result of burns and of these about 45 per cent are children. The extent of a burn is more important than the depth. The majority of victims of severe burns suffer from some degree of surgical shock. When manifest, shock should be treated before attention is given to the wound. This is best done by the methods described. Grease in any form, a home remedy of long standing, should not be used; when applied to extensive burns it has to be removed before the injured surface can be properly treated and this may require an anaesthetic. The frequency of reactions following the use of picric acid in the form of severe dermatitis constitutes a valid objection to this agent.

Recently, Aldridge, following bacteriologic studies on a series of burned patients concluded that most of the fatalities following burns are due to secondary infection of the traumatized tissues and that the representative organism is the gram positive beta hemolytic strep. The most recent contribution to burn therapy is a compound of crystal violet, neutral acriflavine, and brilliant green which is reported to possess all the virtues of gentian violet plus the important additional advantage of exerting bactericidal influence on the gram negative organism. I have had no experience with this.

John F. Burton, M.D., Oklahoma City— I think the significant thing in Dr. Nagle's paper is that burns are a process and not an entity, and if we will keep that in mind in the rationale of treatment, it will be an advantage. There is one method of treatment that might be brought out here, and that is four per cent tannic acid with the immediate application of 10 per cent silver nitrate.

I enjoyed the paper.

Infant Mortality in Germany

In Germany, which has had sickness insurance longer than any other nation in the world, the infant mortality rate is higher than in any state in the United States that is in any way comparable with Germany as to climate and racial uniformity, The Journal of the American Medical association for Dec. 17 reports.

In the Deutsches Aerzteblatt, of Oct. 1, 1938, Hans Klepp reports on "The Struggle Against Infant Mortality," and gives a table showing the course of infant mortality during the present century. Although showing a fairly consistent decrease in the death rate per thousand live births, the 1935 rate in Germany was 69. In eleven northern states that have been in the registration area since 1920, the range of the infant death rate per thousand in 1935 was between 41.2 for Oregon and 53.9 for New Hampshire, according to a summary issued by the Bureau of the Census of the United States Department of Commerce.

Gastrointestinal Allergy*

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Each day the average practitioner of medicine is confronted with a gastrointestinal problem that taxes his diagnostic and therapeutic acumen. Presumably since the beginning of mankind there have been gastrointestinal complaints. The Bible records no evidence of food idiosyncrasies, but Lucretius, an early Roman (96-55 B.C.) actually wrote, "One man's food may be highly poisonous to another." This statement has been revised with time to read, "One man's meat is another man's poison."

Salter, in 1860, published his work on asthma, demonstrating that there was definite relationship between food and asthma. In 1868, Salter[1] published a case report of gastrointestinal reaction in an asthmatic who was sensitive to milk. Smith[2], in 1909, recorded symptoms referable to the gastrointestinal tract from buckwheat sensitization. The year 1914, saw the publication of the excellent work of Laroche, Richet, and Saint Girons[3] on "Gastrointestinal or Alimentary Anaphylaxis." Duke, Gay, Eyermann, Alexander, Vaughan and Rowe, have recorded and discussed many instances of this phenomenon in recent years.

The term "gastrointestinal allergy" will be used throughout this discussion, and should not be confused with food sensitivity which might include all the allergic manifestations due to food, namely; respiratory, gastrointestinal, cutaneous, neurologic, and others. These remarks will be confined to the alimentary tract.

The incidence of these manifestations is not accurately known. Rackemann believes it to be extremely uncommon, while Rowe, on the other hand, doubts that its frequency is properly appreciated. Chaney[4] points out the frequency of abdominal reactions, and Graham, Cole, Copher and Moore[5] have long considered food sensitivity in the differential diagnosis of gall bladder disease, placing it as high as third in importance. Ochsner[6] points to the allergic manifestations in the diagnosis of abdominal conditions as a very important pitfall and insists it must not be overlooked.

Females are most often affected, the proportion being about two to one (Rowe[7]). Positive personal and family histories are obtained in proportion to occurrence of other allergic manifestations.

ETIOLOGY

Heredity is evident in the majority of cases, and in some patients there is a tendency to inherit a sensitivity to a specific food. This has been demonstrated wherein several generations of one family react to the same allergen, as egg or milk. On the other hand, histories may be wanting in inherited manifestations and these apparently fall into a classification of an acquired type.

The ingestion of food and drugs is the common etiological factor in producing symptoms of gastrointestinal allergy. Its action, as a rule, is a local one resulting from direct action of the allergen on the locally sensitized cells. Duke[8] has reported abdominal symptoms which apparently were due to pollen allergy. Eyermann and Freeman have recorded reactions after pollen injection and ingestion.

It is generally believed that the abdominal symptoms associated with migraine are cortical in origin rather than local from an offending food.[1-11] The mechanism is theoretically the same as for urticaria, and has been called intestinal hives.

SYMPTOMATOLOGY

Gastrointestinal symptoms begin at birth and are of great concern to the pediatricians, especially in the form of colic. The bottle-fed infant whose formula has to be altered repeatedly must be considered potentially allergic. Clinical manifestations and symptomatology are numerous as

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shown in the following table, listed in order of frequency:

GASTROINTESTINAL

1. Nausea.
2. Distention.
3. Constipation.
4. Vomiting.
5. Epigastric heaviness.
6. Belching.
7. Intestinal cramping.
8. Canker sores.
9. Pain and soreness in epigastrium.
10. Pain in lower abdomen.
11. Sour stomach.
12. Coated tongue.
13. Pain in midabdomen.
14. Pain in right upper quadrant.
15. Mucous colitis.
16. Heavy breath.
17. Burning, pyrosis.
18. Diarrhea.
19. Ulcer type of pain.
20. Pruritis ani.
21. Proctitis.

GENERAL SYMPTOMS

1. Fatigue.
2. Weakness.
3. Mental dullness and confusion.
4. Nervousness.
5. Irritability.
6. General aching.
7. Fever.

Multitudes of apparent entities have been found to be produced by food sensitivity in allergic individuals, namely; colic, pylorospasm, nausea, vomiting, cyclic vomiting, abdominal pain, diarrhea, and mucous stools in infants and children, and colic, distention, eructations, acidity, cholecystitis, appendicitis, mucous colitis, peptic ulcer, nausea, vomiting, fatigue and weakness in adults. Erhlich[9] has reported two cases of prolapse of the rectum in children caused by food.

Two principal types can be distinguished in relation to symptomatology: Gastrointestinal disturbances occurring in patients with other clinical manifestations of allergy, and those occurring in patients in whom no other allergic manifestation exists. The symptoms in both types may be acute and multiple in character, involving different portions of the gastrointestinal tract, as well as other tissues of the body. Thus, the ingestion of even the smallest amount of egg by a sensitive patient may produce swelling of the mouth, nausea, vomiting, and diarrhea in addition to sneezing and asthma. In others all symptoms may tend to be chronic and localized to the alimentary tract.

In this discussion an attempt will be made to include the more important reactions occurring in the gastrointestinal tract, starting first with the buccal and pharyngeal symptoms.

(1) *Buccal and Pharyngeal*: Contact of the lips and buccal mucous membranes by even minute particles or weak dilutions of certain substances may cause immediate and intense swelling of the tissues in patients with a marked sensitivity. Reactions that may occur other than swelling are burning, itching, or puckering of the mucosa. Canker sores are common and the general consensus is that chocolate and nuts are the most frequent etiological factors. Heavy breath and coated tongue have been listed as other buccal and pharyngeal manifestations. Swelling of the esophagus offers an explanation of globus hystericus.

(2) *Gastric*: Nausea, vomiting, anorexia, distention, epigastric discomfort, belching, heartburn and eructations are common gastric symptoms. These symptoms, so common to organic disease, would lead one to be suspicious of this type of pathology, and it is only through exclusion of organic pathology, plus allergic investigation, that gastrointestinal allergy can be listed as the final diagnosis and proper treatment instituted. Clinical trial will aid in diagnosis by elimination, and then reingestion of causative foods should produce recurrence of symptoms.

Nausea and vomiting are frequent symptoms of gastrointestinal allergy, but are also commonly associated with asthma and migraine.[3-11] In asthma the symptoms may be due to local contact with the offending allergen. In migraine the vomiting and nausea are cerebral in origin. Contrary to this, Rowe believes it to be an allergic reaction on the part of the liver.

Ulcer-like syndromes have been reported in patients due to sensitivity, with no evidence of organic lesion[1]. Gay[10] has reported a large group of ulcer cases (organic lesions demonstrable) in which milk and

other foods were found to be causative factors by the leukopenic method of testing, and upon elimination of these allergens, immediate satisfactory results were produced. The similarity of this type of lesion and canker sores tend to lead Rowe to believe Gay's work will be reproduced by other clinicians.

(3) *Colonic Symptoms*: Diarrhea is the most common symptom of both the acute and chronic form of allergic reaction of the colon, particularly in association with mucous colitis. Constipation is frequently present and alternating with diarrhea is not uncommon. Cramping occurs in the presence of constipation.

The English describe the allergic colon as "irritable" because no true inflammation exists in the presence of symptoms of mucous colitis. Sigmoidscopic examination demonstrates excessive mucus secretion and oft-times presence of blood. There is unusual smooth muscle spasm accompanying this reaction.

Many gastro-enterologists believe this "irritable" type of colon to be functional and psychogenic in origin, and that allergy plays little, if any, part.

Pruritis ani has been demonstrated by a number of authors to be due to food sensitivity.

(4) *Miscellaneous*: One of the most important symptoms of gastrointestinal allergy is grouped under this heading. It is abdominal pain, which may be localized to any quadrant of the abdomen and be associated with organic pathology of the underlying viscera. These pains may be associated with chronic appendicitis, but upon removal of the appendix, a benign, noninflamed specimen is found, however, the caecum should be carefully noted to detect swelling, edema and possible induration.

Hepatic and biliary allergy from food and probably bacteria accounts for many symptoms in these tissues.[13] Hepatic allergy is associated with edema, swelling of the liver, resulting in pain, soreness, jaundice, and digestive dysfunction. Pseudo-cholecystitis as discussed by Alvarez[12] has been demonstrated to be allergic in origin, and symptoms quite often return after operation for removal of the gall bladder. The foods that frequently disagree with healthy people, have been shown to be pathognomonic with biliary disease, and are not allergic in their reaction. Onion is the most frequent offender in this group.

Pain is sometimes acute and an acute abdominal catastrophe seems imminent. This is produced by the allergic reaction and is termed acute abdominal angioneurotic edema, and has been demonstrated at laparotomy to be a large hive-like reaction in the intestinal mucosa. Intestinal obstruction, appendicitis, ruptured viscus, and other abdominal crises, are quite often imitated by gastrointestinal allergy and at times are needlessly operated.

Bleeding often simulates the findings in organic disease and the relationship between Henoch's purpura and allergy has been clearly demonstrated. It is fortunate that these acute crises are infrequent and it takes but little time and few procedures to rule out allergic manifestations in the presence of a bona-fide surgical abdomen.

The systemic, or general, reactions are quite variable. They include fatigue, weakness, drowsiness and mental confusion, and bodily aching.

The following reports of cases demonstrate the stormy course so frequently encountered by the allergic individual:

Report of Cases

Case 1—C.E., a physician's wife, aged 47, came with a complaint of abdominal distress for 20 years, periodic sick headaches, and perennial itching of the nose and eyes, with occasionally marked symptoms of hay fever.

Appendectomy 12 years ago, but patient failed to obtain relief from abdominal distress. The diagnosis was chronic appendicitis. Eight years ago, cholecystectomy brought some improvement in her condition. In the interval between the two operations, the chronic abdominal disturbance was diagnosed as a peptic ulcer.

On questioning the patient, one is unable to obtain a history of an acute attack of appendicitis preceding the symptoms of the chronic appendix. No relief was derived from eating, the taking of soda, emesis, and use of cathartics, heat, or rest. The abdominal symptoms increased with the ingestion of milk. At times there would be mucus in the stool.

The patient was found very sensitive to milk and to a number of other foods. These were removed, with the result that the abdominal symptoms disappeared. It was found by trial, that a teaspoonful of milk was sufficient to reproduce abdominal symptoms and headaches. Patient can tolerate daily as much as six ounces of superheated milk. If more is used, however, a congested nose, fullness in the upper abdomen, or headaches will occur.

This report demonstrates how frequently patients are subjected to polysurgery before the allergic diagnosis is made.

Case 2—W.E., a 34-year-old housewife, entered the clinic complaining of diarrhea of eight year's duration. Mild attacks of frequent loose stools have been experienced since childhood, but during the past eight years symptoms were considerably worse, consisting of four to six loose movements a day, occurring for the most part at night. Very little mucus, no red blood, and very little cramping accompanied bowel action. Nausea and loss of weight and strength also accompanied condition. Systemic symptoms consisted of malaise, insomnia, and nervousness.

Other history was essentially negative except for typhoid fever at age of 15, and appendectomy with unilateral oophorectomy and salpingectomy.

Physical examination and laboratory procedures, including X-ray, were essentially within normal limits.

Allergic investigation revealed a number of etiological factors in the form of foods. With elimination of these foods, definite clinical response was noted, and patient made gradual improvement. However, upon reingestion of one or several of the foods to which she was quite sensitive, there would be a recurrence of symptoms.

This case illustrates food sensitivity in the absence of other allergic manifestations.

Case 3—J.H., aged three years, was first seen at three weeks of age, suffering from colicky pains and persistent vomiting, by a pediatrician. Careful observation for a week lead the physician to believe the child was suffering from hypertrophic pyloric stenosis. A surgical consultant concurred in the diagnosis. At four weeks of age, the abdominal cavity was explored. No evidence of pyloric stenosis or any other abnormality of the abdomen could be detected. After the operation, the child continued to vomit and cry with colic as before, but he retained a sufficient amount of food to sustain life and gain weight slowly.

Most of the time the patient suffered from constipation, but often would have loose bowel movements with a great deal of mucus. The abdominal symptoms interfered so seriously with his comfort and growth that the parents demanded something be done. The pediatrician who first saw the child and the surgeon who operated upon him had an opportunity to observe him carefully over a period of three years, and they finally concluded that either the original diagnosis of hypertrophic pyloric stenosis was correct and that in the exploratory operation the pathological condition had been overlooked, or adhesions had formed, which might have contributed to the present symptoms. The abdomen was again opened. Some adhesions were found, but they were not causing obstruction. The pylorus and stomach were both normal. After the second operation the symptoms continued as before.

Three weeks after the second operation this patient was brought to the clinic for study from the standpoint of food sensitization as a possible cause of the symptoms for which he had been twice operated. A careful history revealed the fact that besides the vomiting and colicky pains, from which he had suffered since three weeks of age, the patient had had from time to time eczema of a rather severe form, having been suffering from it at the time the pediatrician first saw him.

The patient's mother had migraine and eczema; one maternal aunt had hayfever and asthma; the maternal grandmother had asthma; the maternal grandfather had eczema and migraine; the maternal great-grandmother had eczema.

The child had suffered from practically no disease except the gastrointestinal symptoms and the eczema.

At 14 months of age, eggs had been added to the diet, which caused violent attacks of vomiting. The parents had learned that foods which contained egg always increased vomiting, so eggs had been left out of the diet. They thought they had been excluding all foods which contained egg, but it was found that almost daily the child had been taking egg.

At the time of the first operation, the child's diet consisted entirely of breast milk. The mother reported that during this time, on account of the child's doing poorly, she was advised to have plenty of eggs and milk in her diet. About a week after the first operation, he was placed on lactic acid milk, and for the next three years his diet was modified from time to time with the addition of practically everything the child could be persuaded to eat.

Testing for protein sensitivity gave positive reactions to oats, egg, cow's milk, Irish potato, tomato, orange, and grapefruit, the greatest reaction being that produced by the egg.

Removal of the foods found positive on testing, alleviated all abdominal symptoms in 24 hours, and resulted in the disappearance of all skin lesions in one week. By clinical trial the following foods were added, one at a time: grapefruit, orange, tomato, Irish potato, oats, and then cow's milk, with the result that apparently the patient was able to tolerate all of these foods well with the exception of cow's milk. Because of his emaciated condition, milk was not entirely excluded from the diet. Then egg was tried in very small amounts. It caused a return of abdominal symptoms even when the smallest quantity was used. Frequently there has been a recurrence of severe colicky pains, and it was found that the child's parents or nurse had unknowingly given him egg-containing foods. During one attack, which was severe, adrenalin was given in six-minim doses, with relief of symptoms.

This case demonstrates the fact that a patient may clinically be extremely sensitive to two or more foods, developing a complete or partial tolerance to some of them, but retaining a marked sensitization to one. It also shows that a patient may be skin sensitive to many foods, but clinically sensitive to only one or two.

Laboratory and X-Ray Findings

It is a well known fact that laboratory methods and roentgenological examinations are for the most part used to rule out organic pathology. Roentgenological studies of the gastrointestinal tract shows no typical picture for sensitivity, the important factor being exclusion of other existing lesions. Cases have been shown wherein there is hypotonicity of the caecal region and hypertonicity of the transverse and pelvic portions of the colon.

Examination of the stools for eosinophils is not a valuable procedure, as shown by many writers, and the presence of these cells in pathological numbers in the white cell differential is not diagnostic. Fecal examinations should be carried out to rule out parasites or other existing lesions.

Contrary to the work of Loveless[14] we have frequently found a state of subnormal free hydrochloric acid and oft-times achlorhydria existing in patients with gastrointestinal allergy. We have been impressed with the importance of maintaining normal acidity by the clinical response, when proper acid therapy is instituted, plus the allergic outline of each case. Gastric analysis should be a routine in the investigation of these cases.

Diagnosis

In patients with history of hay fever, asthma, urticaria or other allergic conditions, the occurrence of gastrointestinal or abdominal symptoms should at once arouse suspicion that they may be due to food or drug allergy. In these cases it is not difficult to arrive at the correct diagnosis through history, skin tests and therapeutic trial.

Considerable difficulty may be encountered in determining, in the absence of any associated allergic manifestations, that the gastrointestinal complaints of the patient are the result of food sensitivity. It is in these cases that organic pathology must be carefully ruled out. After one is satisfied the condition existing cannot be demonstrated as organic, he is justified in trying to solve the problem from an allergic approach.

Listed according to importance as steps toward diagnosis are the following:

1. History.
2. Skin tests.
3. Elimination diets.
4. Clinical trial.
5. Leukopenic index.
6. Food diary.

Anomnesis is by far the most important item in the above list in the approach of diagnosis. One will be well rewarded by careful and well-planned routine of history taking.

Skin tests are of considerable aid but are by no means infallible. Sixty per cent has been an average figure of their accuracy. This report is by allergists, while gastroenterologists feel they are practically worthless.

Elimination diets and their clinical trial and observations of this trial by an accurately kept food diary are very important in both diagnosis and treatment.

The leukopenic index is still a disputed procedure as to its relative merits. There are many factors that enter into the test that may produce false readings, such as washing the hands, smoking, knitting, laughter, and many similar disturbances. In acute abdominal crises, adrenalin may be used. The efficacy of adrenalin in gastro-intestinal allergy is variable but warrants therapeutic trial, and the results are quite often diagnostic.

The patient should be carefully advised as to possible difficulties encountered in drugs that produce gastrointestinal symptoms, such as phenolphthalein, castor oil, and aspirin. It is as important to educate the patient against the use of certain medications as it is to remove certain foods from the diet.

Treatment

Elimination of the causative food or drug is necessary if results are to be obtained. Hyposensitization by the oral route is a tedious, difficult procedure and the percentage of satisfactory results by this method is very low. Many of the foods that produced weak skin reactions, can often be added gradually to the diet. If it is felt that they produce recurrence of symptoms, they should immediately be withdrawn.

Rowe has published excellent elimination diets based chiefly on egg, wheat, and milk exclusion. One must be careful of vitamin and mineral balance and adequate caloric intake while prescribing this type of diet. Hypodermic desensitization is occasionally employed and the plan of treatment is similar to pollen hyposensitization. This procedure is not without dangers and very severe reactions have been demonstrated. The work of Richet and Urbach, employing the oral administration of propetans, has not been clinically verified, and has been generally discarded.

Symptomatic therapy has to be carefully carried out in all cases, and all manifestations of coexistig organic pathology properly handled.

Particular interest to scientific food classification should be observed in prescribing diets, for example, a patient with marked sensitivity to peanuts should also avoid peas and lentils. When a patient is advised not to eat wheat he should be supplied with information concerning substitutes in the cereal group, and it should be called to his attention that wheat is contained in many foods among which are rye bread, wieners, gravy, and some commercial ice creams.

Hydrochloric acid in adequate dosage is very important to those patients with decreased or absence of the normal acidity figures.

Adrenalin should be given, especially in abnormal crisis, both for therapeutic purposes and as a means of differentiation, since, if symptoms are relieved, one feels the condition to be allergic.

Summary

Gastrointestinal allergy refers to those clinical manifestations of allergy which are limited to the gastrointestinal tract and result from sensitization, either inherited or acquired, of the living cells of part or all of the mucosa. Although foods are usually responsible for the production of symptoms, in gastrointestinal allergy, food allergy may cause other sensitivity manifestations without gastrointestinal symptoms; hence, the two terms should not be used synonymously. Of the various foods which can produce symptoms, eggs, milk, wheat, and chocolate are probably the most frequent offenders. The symptomatology

which can be produced is an extremely varied one, and can mimic almost any lesion of the gastrointestinal tract. When these symptoms occur in a patient who has some other allergic manifestation, it can usually be assumed that they are most likely the result of gastrointestinal allergy. The diagnosis in these instances is accomplished in the same manner as in other allergic diseases, and treatment is similar.

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Insulin Treatment of Schizophrenia*
in the Western Oklahoma Hospital

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Introductory

Dr. Manfred Sakel of Vienna read a paper November 14, 1933, describing a new treatment for schizophrenia. He had been using insulin for the amelioration of withdrawal symptoms in morphine addiction. Certain adventitious results prompted him to try large doses in the treatment of schizophrenia. Repeated doses not only controlled excitement but produced definite mental improvement. He then proceeded to work out a plan of treatment, the alleged results of which have astonished the world. Psychiatrists began flocking to him to witness the work and then to return home and try it in their own hospitals. Beginning December 8, 1936, he gave a six-week's course of instruction in New York. Since then the treatment has been instituted in a considerable number of hospitals and several interesting reports have been published. The bibliography appended herewith is very incomplete. Daily newspapers have carried sensational descriptions of the treatment and results and relatives of patients with mental disorders are appealing to psychiatrists for the treatment. Insulin had been used previously in the treatment of psychoses with malnutrition due to refusal of food. In 1928, Dr. Julius Schuster of Budapest advocated the use of insulin in the treatment of schizophrenia and in that year reported its use in more than 60 cases. These earlier procedures, however, are not to be confused with the hypoglycemic shocks described by Sakel.

In order to promote therapeutic effort and research in Oklahoma Hospitals, the State Board of Public Affairs authorized a visit to the Mayo Clinic for the purpose of studying the insulin treatment. Accordingly, one of us, Johnson, spent some time there in August. The work was being done in the Rochester State Hospital under the direction of Dr. F. P. Moersch and Dr. E. F. Rosenberg and had been going on since the first of January, 1937. Upon return to Supply, we selected six female patients for treatment and on the first day of September work was actually begun. Later, a

*Condensed from a Paper Read at a Meeting of the Woodward County Medical Society, Supply, Oklahoma, December 14, 1937.

group of 12 male patients was started and this group is still receiving intensive treatment. The indications were restricted to schizophrenia. Hypoglycemic shocks may be of value in the treatment of other psychoses; that is a problem for future research. Some work has already been done on the psychoneuroses. Some of the cases classified as schizophrenia or dementia praecox may have been incorrectly diagnosed. We have separated the types of schizophrenia because different results with them have been reported. Some investigators have obtained best results with the paranoid types, others with the catatonics.

Technique

The technique of the treatment is based on that described by Sakel. It is strenuous but can be learned easily and requires no unusual manual skill. Because of the physical dangers it should be administered only in a hospital and because of the mental considerations it should be under the direction of a psychiatrist.

By careful experiment the minimum dose of insulin necessary to produce coma is determined and this is given once a day, five or six days a week, for a period of about eight weeks. Each day the coma is interrupted by the exhibition of a sugar solution, usually by gavage but occasionally intravenously.

The transition from somnolence to coma being gradual, any line of demarcation must of necessity be arbitrary. The onset of coma may be defined as that instant the patient becomes unable to drink. Instead of sinking into a stuporous coma, some patients go into a coma-vigil. Their eyes may remain open and they may carry on somnambulistic conversations and actions. There are so many varieties of reaction that it is unsafe to define the general rule. Any one patient may react differently on different days.

Systematic routine, attention to details, team work, and the absence of outside distraction are important. The hypoglycemic attack is beset with dangers and the intelligent observer will maintain a continual watch over the patients in order to recognize trouble as soon as it develops. The danger to life is real and may be due directly to the treatment or indirectly to secondary complications. The mortality rate is not high. Including patient No. 11 of our series we have collected reliable information of nine deaths. In our opinion, an occasional death will occur even in the most expertly managed clinic. But considering the malignant nature of schizophrenia, there is ample justification for any procedure, regardless of its dangers, that may hold out a reasonable hope for cure.

The awakening from coma is sometimes spectacular. The mental transformation may appear to be miraculous. There is nearly always euphoria. Patients who have for long periods been in a catatonic stupor, who have had to be tube-fed, and who have persistently maintained a state of apathetic mutism may ask for food, manifest an interest in what is going on, and talk readily and relevantly. The first utterances, however, may be silly and the patient may become amused at his own silliness. Logoclonia, echolalia, and echopraxia are common. Infantile talk and conduct suggest a psychological palingenesia. Laughter becomes contagious and the whole room may take on the aspect of a wild party. It is this that breaks the monotony and that may explain some of the enthusiasm of the experimenters. It is well for the workers to become imbued with cheerfulness but not to the degree of lowering their dignity.

Psychotherapy of the practical variety begins here. An attempt is made to restore and maintain the patient's cheerful interest in his surroundings. In order to avoid introversion, his prospects and the conditions of the other patients should not become conspicuous topics for conversation. Even if psychoanalysis were not impracticable, it is my opinion that it is contraindicated. Inhibitions being removed, there might be a temptation to try it but it seems that that would be taking an unfair advantage. The consent for psychoanalysis should be as nearly normally voluntary as possible. In cases receiving insulin treatment it is better to leave the unpleasant past buried in amnesic oblivion. Psychosynthesis, recreation, occupational therapy, industriousness, attention to personal appearance, and general hygiene are essential adjuncts in the treatment. All this

(FOOTNOTE)—Grateful acknowledgment is made to Eli Lilly & Company of Indianapolis, Indiana, for the insulin used.

extra individual attention may be responsible for much of the good results obtained.

The number of visitors in the treatment room should be kept at a minimum and should be restricted to persons with proper professional and official credentials. Relatives should not be admitted to the treatment room, but as soon as the patient is able to appreciate it, they may visit in the afternoon, the object being to encourage the patient's return to contact with reality.

The workers themselves should set good examples in language and conduct. They should be enthusiastic and optimistic without being fanatical. We undertook the work with as open minds as we could command. We tried to avoid prejudice. But we did not go so far as to discard notions and precepts previously handed down by authority and confirmed by observation. To our present satisfaction, we find those notions even more firmly established.

Records

Until some general agreement has been reached regarding the efficacy of this treatment, it is obligatory that the clinical records go into considerable detail. When a very large number of such records from a large number of sources can be assembled, it is hoped that some wise compiler will tell us where we are going. Then perhaps the records can be simplified. Important as records may be, their compilation must not interfere with a vigilant supervision of the patients. Comparatively few of the clinical phenomena resulting from glycopenia have been found to be generally true, and most of them have exceptions. The blood-sugar may descend to the level of 18 mg. per 100 cc or even lower. An occasional early morning glycosuria may be observed. General physical improvement, a healthier skin, and a gain of 15 to 23 pounds has been noted with our patients. The temperature usually falls during hypoglycemia; a minimum of 92 rectal has been observed. The surface temperature of the exposed extremities in ordinary room conditions has been observed as low as 80. The pulse and blood pressure curves are found to be fairly consistent in showing increases during hypoglycemia.

Theories

The physiology and the biochemistry of hyperinsulinism and hypoglycemia in the laboratory animal and in man are being studied by scientists. The changes in the sugar and mineral metabolism during treatment have been described and an effort has been made to discover some consistent relationship between the laboratory and clinical observations. The exact mechanism by which the glycopenia produces its effects on the nervous system remains a mystery. Sakel is quite modest in the presentation of his theory. He reminds one of the hostess who makes profuse apologies for a very excellent entertainment. He assumes that the abnormal activity in the nervous system of the psychotic individual consists of reactions to stimuli deserting their earlier pathways to flow through new and inappropriate channels. The glycopenia blockades these more recent channels first, thereby favoring the reestablishment of the older routes. This explains, too, the greater value of the treatment in the more recent cases. If an inappropriate pathway has been used long enough to have become as firmly established as its conventional predecessor, the glycopenic attack can only blockade them alike.

Results

Excluding the insulin treatment, most of the recoveries from schizophrenia may be attributed to superior institutional care. Some are ascribed to empirical chemotherapy, some are spontaneous, and a few appear to be the result of shock. This use of the term "shock" is not to be confused with that in connection with the insulin treatment. An instantaneous remission has been seen to follow an accident, a severe illness, a surgical operation, or a catastrophe. To go further than to mention those treatments and results is beyond the scope of this paper.

The Western Oklahoma Hospital had a total resident population on December 31, 1933, of 1,205. Of this number 455 or 38 per cent were diagnosed as having dementia praecox. During the calendar years, 1934, '35, and '36, there were admitted 195 additional cases of dementia praecox and during the same period 135 cases of dementia praecox were discharged, 15 as recovered, 111 as improved, and nine as unimproved. Expressed in percentages of the number of schizophrenics admitted eight per cent were recovered, 56 per cent improved, and

five per cent unimproved. The remaining 60 were not discharged and statistics as to their condition have not yet been completed. The foregoing data were compiled from records made before this study had been contemplated and show that the pre-insulin outlook for schizophrenia was not altogether hopeless. But in treating 300 cases with insulin Sakel reports 70 per cent recovered and an additional 10 per cent improved of those who had been psychotic less than six months and 40 per cent recovered of the chronic cases. Although the percentages are computed from different bases, such a score for insulin cannot be ignored.

In examining statistics on psychiatric observations the personalities and viewpoints of the different investigators must be taken into account. We believe that the average American state hospital psychiatrist is inclined to be conservative in reporting recoveries and liberal in reporting improvements. We should remove the beams from our own eyes before searching for motes in the psychological optics of our Viennese brethren. Dussik of Vienna considers that more than 70 per cent of all patients in hospitals for mental disease are schizophrenic. When we compare that with our 38 per cent we are handicapped at the very beginning of the statistical race.

We have not had a sufficient number of patients under treatment nor have we observed them over a long enough period of time to speak with much authority. We should be neither surprised nor perturbed if some of our conclusions were found to be erroneous. This report is preliminary and incomplete and no attempt is made to interpret the results in percentages.

Case Histories

Case 1, E. H., female, age 17 years. This patient had had one previous attack, spent three months and 23 days in the hospital and was discharged as recovered. The insulin treatment was terminated reasonably early in her case as her improvement appeared to have attained its maximum. She was paroled nine days after treatment was discontinued and a recent letter from her father states that she is in excellent physical health, still gaining in weight, and he makes only one complaint about her; she is disobedient and saucy at times. Some of this may be due to improper training but there is a possibility that it is a sequel to the psychosis.

Case 2, R. E. B., female, age 35 years. This patient's physical appearance and health was much improved, her behavior was good throughout the treatment but a nodding mannerism and her rather uncouth habit of belching persists. Her attitude toward her husband remains uncertain and when asked for an explanation of her conduct she evades the answer.

Case 3, F. B., female, age 28 years. This patient required feeding and dressing throughout her entire hospital residence. Just immediately upon awakening she would talk freely, would feed herself, and showed signs of recovery. In a few hours she would relapse into her former negativistic attitude. Her husband took her home one month after treatment was discontinued. A recent letter from him justifies the conclusion that she is still gradually improving. He says that she talks freely, that she dresses herself and makes her bed but that she still refuses to eat unless someone carries the food to her mouth for her.

Case 4, L. R., female, age 19 years. This patient required careful watching during the treatment. She had a few grand mal convulsions. Before beginning treatment she had been incorrigible at times, saucy and indolent. Improvement at the end of treatment was very little. Her father took her home 18 days after treatment was discontinued. A recent letter of inquiry to him has not been answered.

Case 5, G. R. K., female, age 21 years. This patient is said to have had one previous attack. She spent nine months and 24 days in the hospital and was discharged as improved. She was rather irritable and would fight with very little provocation at the beginning of the treatment. There was some improvement in every way at the end of the treatment, but now six weeks later there has been some recession. An aggravated case of acne has almost completely disappeared.

Case 6, M. E., female, age 35 years. Before beginning treatment this patient had to be kept in a side room because of exhibitionism. During the treatments she

seemed to be completely cured of this misconduct and remained so for some time afterwards. Six weeks later she manifests an occasional sign of relapse.

Case 7, J. B., male, age 16 years. This patient had one previous attack from which he appeared to completely recover. On readmission he was very badly excited. By the time treatment was begun, he had already begun to improve. At the time treatment was discontinued his mental condition seemed to be normal. Treatment was terminated a little early in his case because of the onset of pneumonia, due probably to aspiration of fluid from feeding and vomiting. Ten days after onset of pneumonia thoracentesis was performed and 750 cc of mucopurulent fluid was withdrawn from the right chest. He is still in bed and is not yet out of danger.

Case 8, L. H., male, age 17 years. Because of the long duration of this patient's illness and the apparent mental deterioration the prognosis was unfavorable. His physical health is improved. He has gained considerable weight but his reactions have been troublesome. He has had a few convulsions and there have been times when danger was threatened. During the treatment, which he is still receiving, he has talked a little, using an infantile vocabulary with logoclonia and echolalia. The prognosis remains unfavorable.

Case 9, L. M. P., male, age 23 years. Treatment was shortened because of an attack of tachycardia. His reactions during the treatment and since that time have been satisfactory and his parole may be recommended.

Case 10, A. G., male, age 25 years. This patient has made much improvement in general appearance. Before beginning treatment he had been combative at times. He has given no trouble lately but he does not reply to questions promptly and his mental condition remains unsatisfactory. He is still taking treatment.

Case 11, G. W. O., male, age 18 years. When this patient entered the hospital he was practically maniacal. He was destructive. His clothes could not be kept on him and for a few days his general condition was unsatisfactory. When treatment was begun he had already made some improvement. He reacted very well until the eighth treatment at which time he received 80 units of insulin and went into what appeared to be a usual coma. When the time came to terminate the hypoglycemia sugar was administered but he did not wake up. Ceaseless efforts were then begun by using adrenalin, intravenous injections of glucose, and so forth in an attempt to arouse him, all without avail. He remained in this coma 12 days at the end of which time he died. He did not develop pneumonia nor did there appear to be any complication other than the persistent coma.

During the first few days of coma he would have occasional attacks of extreme opisthotonos and lordosis. Such attacks always yielded promptly to the intravenous injection of glucose. During these 12 days all nourishment had to be given with a stomach tube and a number of special procedures were resorted to when necessary to combat transient symptoms.

Case 12, H. F., male, age 33 years. The patient's improved physical appearance constitutes the chief change due to his treatment. When his parents visited him the other day he did a number of erratic things, for example, he sat in the automobile and talked to his father but refused to talk to the mother unless he were assured that he could go home. The prognosis remains unfavorable. Treatment was discontinued a few days ago because of fever and an attack of tachycardia.

Case 13, A. P., male, age 21 years. Treatment has been without incident. He is still receiving treatment and it may be that he has made some mental improvement.

Case 14, C. C., male, age 22 years. This very quiet patient has been quiet throughout the treatment and he too may have shown a little mental improvement. He is still receiving treatment.

Case 15, D. D., male, age 39 years. Treatment has been without incident. He is still receiving treatment and it may be that he has made some mental improvement.

Case 16, J. F. P., male, age 37 years. Treatment has been without incident. He is still receiving treatment and it may be that he has made some mental improvement.

Case 17, R. D., male, age 24 years. This patient was taken off treatment yesterday as his improvement seemed to have reached its maximum. His psychosis has been one a little difficult to describe. His symptoms have been somewhat elusive. He appears to be very much improved. The Examiner's prognosis is favorable but guarded. Considerable difficulty was had in feeding him with a tube. More than half the time the feeding tube would go into the trachea rather than the esophagus during the insertion of the tube. He would struggle violently making it very difficult to feed him. He required the largest dose of any that we have used, sometimes as much as 120 units at a time.

Case 18, B. C. B., male, age 30 years. This patient is still receiving treatment. His behavior is satisfactory but he has not been tested recently regarding his paranoid delusions. No prediction is being made at this time regarding the outcome.

Conclusions

1. Induced insulin hypoglycemia is a positive contribution to the therapy of schizophrenia.

2. The percentage of favorable results in the Western Oklahoma Hospital has not been as high as that reported in much of the literature.

3. The treatment may hasten a remission already in progress.

4. The sooner treatment is begun after onset of the disorder, the better the prognosis.

5. Best results have been observed in cases of the catatonic type.

6. The concommitant psychotherapy and special attention is responsible for much of the good results.

7. Used indiscriminately some cases will be restored, some improved, some unchanged, and some made worse.

8. The permanency of these results cannot be evaluated for some time.

9. A gain in weight and a general improvement in physical health almost always takes place but occasionally a death will occur during treatment. Undesirable sequelae may develop late.

10. Unless the individual shall have acquired an immunity in addition to his remission, relapse will occur when he is returned to the offending situation.

11. The immediate problems are the perfection of the technique of treatment and the determining in advance more specifically the indications and contraindications.

12. The State Hospital should not be expected to pursue this treatment without additional financial support.

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Importance of Instant Attention to Trivial Injuries

Instant attention to trivial injuries greatly reduces the incidence of felons, E. A. Devenish, M.D., London, England, points out in an article in The Archives of Surgery, an abstract of which appears in The Journal of the American Medical Association for Dec. 17.

Immediate treatment should include cleansing of the wound, its protection against contamination and a warning to patient to report to his physician immedately if the finger or hand becomes painful. A matter of a few hours' delay can bring about a condition that will require surgery or even amputation, whereas with earlier attention simple medical measures would have sufficed.

Swelling and congestion of the inflamed area should be reduced to a minimum by elevating the injured extremity. If splinting is used circulation must not be interfered with.

Although bone conduction seems to be the active cause of ear degeneration, air conduction likewise has been found to be responsible for deafness and deterioration of the auditory apparatus.—Hygeia.

Surgical Treatment of Maxillary Antrum Infections*

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I should like to limit this paper to a discussion of the treatment of the pyogenic infections of the maxillary antrum. For the purpose of our discussion I would like to define such a condition as an abscess of and within the maxillary antrum. This would exclude from the discussion such subjects as the maxillary antrum with infection wherein the natural otsei afford adequate drainage. It would also exclude all conditions that are neoplastic in origin, tubercular or luetic. We wish to discuss the pus producing infections which invade the maxillary antrum and produce therein a reaction which has resulted in a partial or complete filling of the antrum with pus under pressure, and less than adequate drainage, if any.

It seems likely that every surgeon is aware of the principles involved in the treatment of an abscess. These principles are fairly well defined and have been taught in the surgical departments of medical schools for many years. Briefly they are:

1. Attempt to secure adequate drainage.
2. Attempt to sterilize the cavity.
3. Attempt to obliterate the cavity.
4. Attempt to restore the tissues to normal functional integrity.

The problem then is one of adapting these principles to the treatment of the maxillary antrum.

In attempting to secure drainage it will appear necessary to establish an opening sufficiently large to reduce the pressure within the antrum and to permit the continuous escape of the pus. This opening should be sufficiently large if possible to assure continuous drainage so long as it is needed. The determination of the time when such drainage should be instituted must rest with the judgment of the surgeon as with the treatment of any other abscess. Practically we find that a large number of these cases come to our attention in a condition where there is some reason to doubt the necessity of the establishing of drainage by surgical means. We are justified therefore in attempting by medical treatment to establish adequate drainage. We conceive that it is also important to remember that, whereas the patient will appreciate treatment without surgery, they will always condemn a protracted illness or a chronic infection which may result by delayed drainage.

Sufficient drainage in the acute pyogenic infection may be secured through the natural osteum by needling. But the very fact that this condition is present usually constitutes good evidence that natural or accessory osteum drainage has already proved inadequate and needling is a very poor assistant to drainage. It is therefore necessary in most of these cases to establish drainage through a large opening. We prefer to make this opening in the most dependent portion of the sinus available, and routinely use that point in the lateral wall which is inferior to the lower turbinate and two or three cm. posterior to the anterior tip. For some years we have preferred a drill for this purpose. We believe that this is particularly advantageous because of the fact that it is possible to obtain adequate drainage with less trauma to the tissues involved. We are especially anxious to produce as little damage as possible to the adjacent tissues. In keeping with the idea of securing adequate drainage, this opening is usually made about one-fourth inch in diameter or slightly less. The desire to attempt to restore to normal function cautions us to make this opening at once sufficiently small so that we may expect it to close by the time the abscess has been sufficiently drained.

All manner of attempts to sterilize the cavity of the antrum have been proposed. Every antiseptic under Heaven, so far as we know, has been squirted into the an-

*Presented to the Pottawatomie County Medical Society in regular meeting of April 16, 1938, by Clinton Gallaher, M.D.

trum with the idea of combating the infection. We believe that as a principle the idea of sterilizing the cavity of the antrum is of considerable benefit. Our particular reason for objecting to attempts of sterilization lies in the fact that it appears to be impossible and anything which will produce a sterility as of micro-organisms, will undoubtedly produce a devitalizing or necrosing effect upon the ciliated epithelium which lines the cavity. Hence it would appear impossible to sterilize the cavity and at once maintain the hope of ultimately restoring the normal function of the tissues which line the cavity. In view of these considerations we are at once convinced that normal saline washing is the method of choice, with or without 1/4 of 1 per cent ephedrin sulphate. One other detail we feel is important. Proetz has demonstrated beyond a doubt that ciliated epithelium is destroyed by temperatures of 42 degrees C. and above. He also states that temperatures below 37.5 degrees C. have a tendency to sharply retard the action of the cilia. But unless the temperature is actually freezing there is no harm done. It is therefore important to regard the temperature of the solution. It may be that we will sometime find a solution which will effectively produce a condition of sterility in the cavity without injury to the tissues. But until we are certain that the solution will produce this happy result I feel sure that we will repeatedly be disappointed in the results of treatment which includes attempts to sterilize the cavity.

When we consider this subject in relation to attempting to obliterate the cavity, our analogy begins to disintegrate. The only way in which an attempt is ever made to obliterate the cavity is in effect an attempt to exteriorize the cavity. It is true that polyps and neoplasms occasionally obliterate the cavity, but only through pathological processes is this condition ever brought about. There is an advanced state of infection of the maxillary antrum wherein, in a relatively very small number of cases it appears impossible to re-establish a normally functioning antrum. The classical Caldwell-Luc operation has been suggested for this purpose. It generally consists of a large incision through the alveolar process and a large opening under the inferior turbinate producing a through drainage. Extensive curretage is usually associated with this operation also. We see relatively few of those people who have had this operation, but in our limited observation it seems that the results are often far from satisfactory. I doubt very much if I will ever do a Caldwell-Luc. I prefer rather the technique which is extensively employed, of simply making a large window under the inferior turbinate. Packing the cavity with gauze and removing a small portion each day apparently has a tendency to produce benefit. It is true that these cases will continue in many instances to exhibit manifestations of chronic infection. But it is equally true that many of them will become entirely comfortable and heal to the extent that a very small amount of serous drainage is the only persisting sign. Under no circumstances will such an antrum ordinarily become acutely inflamed and if this should occur the signs and symptoms incident to the presence of pus under pressure and absorption are but moderate.

In relation to attempting to establish the normal function of the antrum, all of the procedures discussed apply. The original drainage is made large enough to be adequate but there is a definite attempt to keep it sufficiently small to assure ultimate closure and re-establishment of drainage through the natural osteum. We believe that it is only in this manner that we may hope to re-establish the function of warming and moistening and aiding in the filtration of inspired air. We believe that it is especially important in this connection to improve such methods and technique as may be expected to produce the least possible damage to every tissue involved. I do not believe that it is possible to overstress the importance of this care and technique. It is reasonable to assume that an infection treated early, adequately and carefully, in a large majority will be healed within a few days and with a very few repeated washings.

In concluding I wish to again stress the following points. Let us attempt to secure adequate drainage as soon as the indication becomes definite. Let our attempts to sterilize the cavity be limited to washing with normal saline and to rely upon the natural physiological processes to produce that happy result. In cases where

the effect of obliterating the cavity seems necessary let us use the most conservative means which may be expected to produce results and keep our operative proceedures relative simple and not extensive. In all advice and treatment either medical or surgical, let us remember the delicate nature of the tissues involved, the physiological properties and the necessity of restoring to normal function in so far as possible. We believe that it is only with these factors in mind that we may work to the best interest of our patient and secure for them the most satisfactory and early results.

State Prenatal and Premarital Examination Laws

CHAS. M. PEARCE, M.D.
Commissioner, Oklahoma Health Department
DAVID V. HUDSON, M.D.
Consultant Genitoinfectious Diseases
Oklahoma State Health Department
OKLAHOMA CITY, OKLAHOMA

Public interest has been aroused to the importance of syphilis as a public health problem and one manifestation of this interest has been the attention paid to the passing of more effective laws for the control of syphilis. Two phases of syphilis control are commanding interest because of their importance. These are prenatal and premarital examinations. Three states, New York, New Jersey, and Rhode Island have prenatal examination laws while 26 states have premarital examination laws. The Oklahoma laws do not require a physician's certificate from an applicant for a marriage license, nor is there any provision for serodiagnostic tests in pregnancy.

The Health Department is preparing Prenatal and Premarital Examination Laws based upon the suggested forms reprinted below from the Journal of Social Hygiene. Space does not permit discussion of the reasons for the form of the following laws and the reader is referred to the November, 1938, issue of the Journal of Social Hygiene for the background and details.

It is important that physicians be familiar with these laws in order to answer questions from interested persons. They will become the subject of much discussion and it is imperative that the public have correct information regarding the contents and purposes of these laws.

"A SUGGESTED FORM OF A STATE PRENATAL EXAMINATION LAW"

Section I—Serological blood test for syphilis of pregnant women. Every physician attending a pregnant woman in (name of state) during gestation shall, in the case of each woman so attended, take or cause to be taken a sample of blood of such woman at the time of first examination, and submit such sample to an approved laboratory for a standard serological test for syphilis. Every other person permitted by law to attend upon pregnant women in the state but not permitted by law to take blood tests, shall cause a sample of the blood of such pregnant woman to be taken by a duly licensed physician and submitted to an approved laboratory for a standard serological test for syphilis. The term "approved laboratory" means a laboratory approved for this purpose by the state department of health. A standard serological test for syphilis is one recognized as such by the state department of health. Such laboratory tests as are required by this act shall be made on request without charge by the state department of health.

Section II—In reporting every birth and stillbirth, physicians and others permitted to attend pregnancy cases and required to report births and stillbirths, shall state on the birth certificate or stillbirth certificate, as the case may be, whether a blood

test for syphilis has been made during such pregnancy upon a specimen of blood taken from the woman who bore the child for which a birth or stillbirth certificate is filed and, if made, the date when such test was made, and, if not made, the reason why such test was not made. In no event shall the birth certificate state the result of the test.

Section III—The sum of .....dollars ($.....), or so much thereof as may be necessary, is hereby appropriated out of any moneys in the state treasury to the state department of health to cover additional clerical, printing, laboratory and other expenses in carrying out the provisions of this act.

Section IV—This act shall take effect immediately.

"A Suggested Form of a State Premarital Examination Law"

Section I—It shall be necessary for all persons intending to be married to obtain a marriage license from the (here insert the name of the person or persons authorized under the law of the state in question to issue such licenses) and to deliver said license, within sixty days from the date of issue, to the clergyman or other qualified person who is to officiate before the marriage can be performed.

Section II—Before any person, authorized by law to issue marriage licenses, shall accept an application for any such license each applicant therefor shall file with him a certificate from a duly licensed physician stating that such applicant has been given such examination, including a standard serological test, as may be necessary for the discovery of syphilis, made not more than thirty days prior to the date of such application, and that, in the opinion of the physician, the person therein named either is not infected with syphilis or, if so infected, is not in a stage of that disease which is or may become communicable to the marital partner.

Section III--Because of an emergency or other cause shown by affidavit or other proof, a judge of the (name of proper) court, if satisfied by medical and/or other testimony that neither the health of the individuals nor the public health and welfare will be injuriously affected thereby, may make an order, on joint application of both of the parties desiring the marriage license, dispensing with those requirements of Sections II and IV which relate to the filing with the licensing authority by either or both of the parties of the physicians' certificates and the laboratory statements or, the said certificates and statements having been filed, extending the thirty day period following the examination and test to not later than ninety days after such examination and test. The order shall be accompanied by a memorandum in writing from the judge, reciting his reasons for granting the order. Application for such extension may be made before, on or after the expiration of such thirty day period. The order and the accompanying memorandum shall be filed with the licensing authority and the latter shall thereupon accept the application for the marriage license without the production or filing of the physicians' certificates and the laboratory statements dispensed with by the order, or shall accept the application within any such extended period, as the case may be. The licensing authority and his clerks and employees shall hold such memorandum of the judge in absolute confidence.

Section IV—Each physicians' statement shall be acompanied by a statement from the person in charge of the laboratory making the test, or from some other person authorized to make such a statement, setting forth the name of the test, the date it was completed and the name and address of the person whose blood was tested, but not stating the result of the test. The physicians statement and the laboratory statement shall be on the same form sheet. Upon a separate form a detailed report of the laboratory test, showing the result of the test, shall be transmitted by the laboratory to the physician who, after examining it and if he deems it desirable, discussing it with either or both the proposed marital partners, shall file it with the state (or local) health officer, where it shall be held in absolute confidence and shall not be open to public inspection; provided that it shall be produced for evidence at a trial or proceeding in a court of competent jurisdiction, involving issues in which it may be material and relevant, on an order of a justice or a judge of such court requiring its production.

Section V—A standard serological test shall be a laboratory test for syphilis approved by the state commissioner of health and shall be performed by the state department of health, on request, free of charge or at a laboratory approved for this purpose by the state department of health.

Section VI—Nothing in this act shall impair or affect existing laws, rules, regulations or codes made by authority of law, relative to the reporting by physicians and others of cases of syphilis discovered by them.

Section VII—Marriage licenses shall be issued to all applicants who have complied with the provisions of this act and who are otherwise entitled under the laws of (name of the state) to apply therefor and to contract matrimony.

Every such license, when issued, shall have endorsed thereon or annexed thereto at the end thereof, a statement, subscribed by the person issuing the license that the application for the license was accompanied by papers complying with the applicable requirements of Sections II and IV of this act relative to examination and health of the parties or, if such compliance was dispensed with, wholly or partly, by order of a judge, a statement to that effect.

The license issued, including the above statement and the certificate duly signed by the person who shall have solemnized the marriage therein authorized, shall be returned by him to the licensing authority who issued the same within five days succeeding the date of the solemnizing of the marriage therein authorized, and any person or persons who shall wilfully neglect to make such return within the time above required shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than ..... dollars or more than ..... dollars for each and every offense.

Section VIII—Any applicant for a marriage license, any physician or any representative of a laboratory who shall misrepresent any of the facts called for by the physicians statement and the laboratory report or statement, or any licensing officer who shall accept an application for a license without the accompanying physicians statement and laboratory report, as required in Sections II and IV hereof, unless the same shall have been dispensed with by judicial order as provided in Section III, or who shall have reason to believe that any of the facts contained in said statement or report have been misrepresented and shall nevertheless issue a marriage license, or any health officer or his employee who shall not hold the laboratory record confidential, except as provided in Section IV hereof with respect to its production for evidence on order of a judge, or any officer, clerk or employee of the office issuing the license who shall not hold in strictest confidence the statement filed with him as to the reasons for granting a judicial order, as provided under Section III hereof, shall be guilty of a misdemeanor and punishable accordingly.

Section IX—The sum of .....dollars ($.....), or so much thereof as may be necessary, is hereby appropriated out of any moneys in the state treasury to the state department of health, to cover additional clerical, printing, laboratory and other expenses in carrying out the provisions of this act.

Section X—This act shall take effect on (a day specified at least three months after its passage).

References

Johnson, Bascom: Premarital and Prenatal Examination Laws. Journal of Social Hygiene, Vol. 24, No. 8, November, 1938, p. 477.

Nicotinic Acid Reactions

The unpleasant reactions that often follow treatment with nicotinic acid may be due to the rate at which the drug is absorbed into the system, W. H. Sebrell, M.D., and R. E. Butler, M.D., Washington, D. C., report in The Journal of the American Medical Association for December 17.

Nicotinic acid is used in the treatment of pellagra (weakness and scaliness), which is due to a deficiency of certain vitamins.

The reactions are harmless to the individual and should not interfere with the use of the acid in treatment. They include tingling, dizziness, itching, rash, flushing of the skin and nausea.

The body requires mineral elements for growth, repair and regulation of body processes.—Hygeia.

Coronary thrombosis is that rather common accident in which a clot has shut off the blood supply to the heart.—Hygeia.

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OF THE
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Vol. XXXII JANUARY Number 1

DR. L. S. WILLOUR.....Editor-in-Chief
McAlester, Oklahoma

DR. T. H. McCARLEY.....Associate Editor
McAlester, Oklahoma

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The editorial department is not responsible for the opinions expressed in the original articles of contributors.

Reprints of original articles will be supplied at actual cost provided request for them is attached to manuscripts or made in sufficient time before publication.

Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in The Journal the manuscript will be returned to the writer.

Failure to receive The Journal should call for immediate notification of the Editor, McAlester Clinic, McAlester, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes of addresses, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application.

It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

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EDITORIAL

OUR EXECUTIVE SECRETARY

Since the meeting of the House of Delegates at Muskogee, last May, when this body requested the Council to employ a full time Executive Secretary, the Council has had the matter under consideration. A Committee to consider applicants was appointed by the President composed of the following: Doctors J. D. Osborn, Jr., Frederick, James Stevenson, Tulsa, and P. M. McNeill, Oklahoma City, who immediately proceeded to their task of investigating and interviewing many applicants. The Council felt that the financial condition of the Association was such that an Executive Secretary could not be immediately employed, so the matter was put off from time to time until a called meeting of the Council at Oklahoma City, December 11th, 1938, when several applicants were presented by the Committee, and Mr. R. H. Graham of Peabody, Kansas, was employed, his services to begin January 1, 1939.

Mr. Graham is a young man, very enthusiastic about his proposed work. He is a graduate of Peabody High School and attended Kansas University. He is a young man of excellent presence and has many ideas relative to his work which the Council believe will improve the service of the State Association to its members as well as the service of Organized Medicine to the public.

The Council immediately voted sufficient funds for Mr. Graham to make a tour of inspection to some of the States where full-time, lay Executive Secretaries are employed and also to visit the headquarters of the American Medical Association in Chicago, and familiarize himself with the different departments. His office will be with the Secretary-Treasurer-Editor in McAlester, Oklahoma. However, it will be necessary for him to spend considerable time on the road visiting the various County Medical Societies and representing our interests wherever he may be most needed.

It is our opinion that this addition to the Staff of the Headquarters office of the State Association will be of great benefit and it is asked that the membership, in every way, give him complete co-operation and feel free to call for him for any assistance that he may be able to render.

INSURANCE MEDICAL DIRECTORIES*

The attention of all members is called to the following resolution adopted by the Society at the Hot Springs meeting April 29th:

"WHEREAS, certain commercial interests are publishing medical directories, listing physicians by specialty and otherwise, as available for insurance and compensation work, and other professional services, and

"WHEREAS, participation by listing in these lay publications merely serves for the profit of the promoters, and is

*Copied from Journal, Arkansas Medical Society.

furthermore technically indirect solicitation of patients.

"THEREFORE, BE IT RESOLVED, That the Arkansas Medical Society condemns these practices as unethical and forbids its members to continue listing their names in such directories, and

"BE IT FURTHER RESOLVED, That the Arkansas Medical Society requests the House of Delegates of the American Medical Association to take similar action."

The resolution was presented to the House of Delegates of the American Medical Association and referred to the Judicial Council for study. The Judicial Council approved the resolution and recommended its adoption, which the House of Delegates did at the session of May 14th, 1936.

The attention of our members has been previously called to the activities of these directory publishers. As is often the case, individual physicians felt that they might incur a loss if they removed their names from such directories while other members retained their listing. With this thought in mind, the above resolution has been adopted. The practice of so listing is declared unethical; no individual member may now feel that should he remove his name that another physician will accept that listing. The benefit is direct to these physicians in the fees saved; the loss is entirely the promoters.

Some idea of the financial gains involved in the publication of these directories may be understood when we state that one directory now on our desk contains the names of approximately 5,000 physicians. Ninety-two Arkansas physicians are listed in the three directories available to The Journal. The fee charged for listing in this one directory is $15.00 per annum. A liberal estimate of the cost of publication and distribution is $15,000. The balance, $60,000, is presumably divided between the promoter and his solicitors. Verily, a most altruistic motive prompts the publication.

Editorial Notes—Personal and General

DR. R. M. ANDERSON, Shawnee, has been appointed a member of the Council of the Southern Medical Association from Oklahoma for a regular Council term of five years, the appointment having been announced recently by the President, Dr. Walter E. Vest, of Huntington, West Virginia. Dr. Anderson succeeds Dr. W. K. West, Oklahoma City, who, having served the constitutional limit, was not eligible for reappointment.

DR. MORRIS FISHBEIN, Editor Journal American Medical Association, Chicago, will be the guest of Pottawatomie County Medical Society, March 14, 1939, at Shawnee.

DR. EDW. D. McKAY, formerly with the Miami Clinic at Miami, is now with the Wesley Clinic, Oklahoma City.

DR. W. JACKSON SAYLES, announces his association with the Miami Clinic, Miami.

DR. and MRS. ONIS HAZEL, Oklahoma City, have returned from a trip to Texas and Mexico. Dr. Hazel read a paper before the meeting of the North Texas Medical Society.

DR. E. S. KILPATRICK, formerly of Elk City, now of Erick, is reported recovering from an operation for a gall bladder condition.

DR. ELIZABETH CHAMBERLAIN, Bartlesville, is reported recovering from injuries received in an automobile accident some weeks ago.

DR. HENRY H. TURNER, Oklahoma City, was guest speaker before the regular December Staff meeting of the McAlester Clinic.

DR. GEO. S. KILPATRICK, McAlester, has returned from a visit to the Pacific Coast.

DR. EARL D. McBRIDE, Oklahoma City, had as guest of honor at a dinner given by him at his new Clinic Building, December 27, 1938, Dr. Edward L. Compere of the University of Chicago, who addressed the guests on some important orthopedic problems.

DR. HENRY H. TURNER, Oklahoma City, was guest speaker before the regular Staff Meeting of the McAlester Clinic, in December.

DR. M. B. GLISMANN, Okmulgee, will spend the next few months in New Orleans where he will do post graduate work at Tulane University.

News of the County Medical Societies

OKLAHOMA County Medical Society have the following officers for 1939:

President, Dr. Carroll M. Pounders; Vice-President, Dr. Tom Lowry; Secretary-Treasurer, Dr. Geo. H. Garrison; Board of Directors, Doctors Rex Bolend, John F. Burton, C. J. Fishman, Geo. H. Garrison, John E. Heatley, P. M. McNeill, Tom Lowry, Carroll M. Pounders, W. W. Rucks, Jr.; Board of Censors, Doctors Lea A. Riely, Walker Morledge, Dan R. Sewell; Delegates, Doctors, W. F. Keller, Walker Morledge, John F. Burton, C. R. Rountree, Geo. H. Garrison, Ben H. Nicholson, D. H. O'Don-

oghue, L. J. Moorman, W. W. Rucks, Jr., Allen G. Gibbs, Ralph Bowen and Wann Langston; Alternates, Doctors O. A. Watson, C. P. Bondurant, John E. Heatley, L. Chester McHenry, Lloyd C. Boatright, H. Dale Collins, J. C. Macdonald, L. J. Starry, C. M. Pounders, Hugh Jeter, Henry H. Turner, and E. S. Ferguson.

BLAINE County Medical Society elected the following officers for 1939 at their meeting December 15th: President, Dr. A. K. Cox, Watonga; Vice-President, Dr. Wm. F. Boheman, Watonga; Secretary, Dr. W. F. Griffin, Watonga.

PITTSBURG County Medical Society held their regular annual election in December and elected the following officers: President, Dr. Geo. S. Kilpatrick; Vice-President, Dr. C. O. Williams; Secretary, Dr. Edw. D. Greenberger, all of McAlester. Dr. T. H. McCarley held over as Delegate and Dr. E. H. Shuller was the newly elected delegate, for two years.

WAGONER County Medical Society elected the following officers for 1939 at their recent meeting: President, Dr. H. K. Riddle, Coweta; Vice-President, Dr. J. H. Plunkett, Wagoner; Secretary-Treasurer, Dr. Francis S. Crane, Wagoner.

LINCOLN County Medical Society met in December and elected the following officers to serve for 1939: President, Dr. Carl H. Bailey, Stroud; Vice-President, Dr. C. W. Robertson, Chandler; Secretary-Treasurer, Dr. E. F. Hurlbut, Meeker; Delegate, Dr. Ned Burleson, Prague; Alternate, Dr. W. B. Jenkins, Tryon.

WASHINGTON County Medical Society met December 14th and elected the following officers for 1939: President, Dr. L. D. Hudson, Dewey; Vice-President, Dr. William LeBlanc, Ochelata; Secretary, Dr. J. V. Athey, Bartlesville; Treasurer, Dr. O. I. Green, Bartlesville; Delegate, Dr. J. E. Crawford, Bartlesville; Alternate, Dr. E. E. Beechwood, Bartlesville.

JEFFERSON County Medical Society met December 12th electing the following officers for 1939: President, Dr. L. L. Wade, Ryan; Vice-President, Dr. W. M. Browning, Waurika; Secretary, Dr. J. I. Derr, Waurika; Delegate, Dr. C. M. Maupin, Waurika.

GRANT County Medical Society met November 23rd and elected the following officers for 1939: President, Dr. I. V. Hardy, Medford; Vice-President, Dr. S. A. Lively, Wakita; Secretary-Treasurer, Dr. E. E. Lawson, Medford.

CHOCTAW County Medical Society elected the following officers at their meeting in December: President, Dr. Robt. L. Gee, Hugo; Secretary, Dr. Floyd L. Waters, Hugo.

GARVIN County Medical Society elected the following officers for 1939 at their meeting in December: President, Dr. Edw. T. Shirley, Pauls Valley; Vice-President, Dr. Hugh Monroe, Lindsay; Secretary-Treasurer, Dr. John R. Callaway, Pauls Valley; Censor 1939 to 1941, Dr. Hugh Monroe; Delegate, Dr. Hugh Monroe; Alternate, Dr. Robt. M. Alexander, Paoli.

WOODWARD County Medical Society met December 13th for their annual election of officers. Dinner at 6:30 was followed by business meetings of both the Auxiliary and the Doctors. Their scientific program was as follows: Dr. H. L. Johnson, member of the Staff of the Western Hospital, gave a report on the results of the insulin treatment in this hospital during the past year. Dr. Coyne H. Campbell, Oklahoma City, guest speaker, gave an interesting talk, and Dr. H. K. Speed, Sayre, President of the State Association, gave a very interesting talk.

The following officers were elected following the meeting: President, Dr. C. E. Williams, Woodward; Vice-President, Dr. Floyd Newman, Shattuck; Secretary, Dr. C. W. Tedrowe, Woodward.

POTTAWATOMIE County Medical Society elected the following officers at their meeting December 17th: President, Dr. E. Eugene Rice (re-elected), Shawnee; Vice-President, Dr. C. C. Young, Shawnee; Secretary-Treasurer, Dr. Clinton Gallaher (re-elected), Shawnee; Trustee, Dr. J. M. Byrum, Shawnee; (President and Secretary also Trustees); Board of Censors, Dr. Horton E. Hughes, Shawnee (elected for three years); other Censors, Drs. R. C. Kaylor, McLoud; M. A. Baker, Shawnee.

ROGERS County Medical Society elected Dr. Earle E. Bigler, Claremore, President, and Dr. P. A. Anderson, Claremore, Secretary, for 1939.

MURRAY County Medical Society met December 19th and elected the following officers for 1939: Dr. Warren E. Parker, President, Davis; Dr. Arthur Fowler, Vice-President, Sulphur; Dr. Richard M. Burke, Secretary-Treasurer, Sulphur; Dr. Ernest Rose, Delegate, Sulphur; Dr. P. V. Annadown, Alternate, Sulphur; Dr. Geo. W. Slover, Dr. F. E. Sadler, Dr. Ernest Rose, Councillors, all of Sulphur.

New Books

THE HEART IN PREGNANCY, by Julius Jensen, Ph.D. (In Medicine), University of Minnesota, M.R.C.S., (England), L.R.C.P. (London) Assistant Professor of Clinical Medicine, Washington University School of Medicine; Assistant Physician to Barnes Hospital; Physician to St. Louis Maternity Hospital and St. Louis City Hospital. Price $5.50. The C. V. Mosby Company, St. Louis, 1938.

This is a very timely book on a very important subject. There is a wide divergence of opinion among competent observers concerning the ability of the cardiac patient to bear children. This most complete volume on that subject should clarify some of these debated questions.

This book is divided into three parts: (1) The Effect of Pregnancy on the Normal Heart; (2) Abnormal Cardiac Impulse Formation During Childbearing, and (3) Organic Heart Disease and Pregnancy.

It should be of much use to any physician that comes in contact with obstetrical patients.

THE COMPLETE PEDIATRICIAN, Second, Completely Rewritten 1938 Edition, For the Use of Medical Students, Internes, General Practitioners, and Pediatricians, by Wilburt C. Davidson, M.A., D.Sc., M.D. Professor of Pediatrics, Duke University School of Medicine, and Pediatrician, Duke Hospital, Formerly Acting Head of Department of Pediatrics, The Johns Hopkins University School of Medicine, and Acting Pediatrician in Charge, The Johns Hopkins Hospital, Fellow American Academy of Pediatrics and American College of Physicians. Member White House Conference, American Pediatric Society and American Board of Pediatrics. Durham, N. C., Printed by Seeman Printery for Duke University Press, 1938. (Adaption of the Title Page of The Compleat Angler by Izaak Walton, 1653).

This is a very unique book on Pediatrics. At

first glance it would appear that it is poorly connected, but if one will read the instructions at the beginning of the book it will be very easily understood. It combines in one volume the information usually found in several volumes. Of course if the reader desires a more complete description of a condition it would be necessary to consult more complete volumes.

The book is divided into groups of diseases: (1) Respiratory; (2) Gastro-Intestinal; (3) Skin and Contagious; (4) Neuro-psychiatric; (5) Circulatory Metabolic and Glandular; (6) Urological; (7) Orthopedic and (8) Unclassified.

This volume should be very useful to any physician who has anything to do with children. It should be especially useful to a very busy general practitioner.

CLINICAL LABORATORY METHODS AND DIAGNOSIS, A Textbook on Laboratory Procedures With Their Interpretation, by R. B. H. Gradwohl, M.D. Director of the Gradwohl Laboratories and Gradwohl School of Laboratory Technique; Formerly Director of Laboratories, St. Louis County Hospital; Pathologist to Christian Hospital; Director, Research Laboratory St. Louis Metropolitan Police Department, St. Louis, Mo.; Commander, Medical Corps, Fleet, United States Naval Reserve. With 492 Illustrations in the Text and 44 Color Plates. Second Edition, The C. V. Mosby Company, St. Louis, 1938.

The first edition of this text was received with considerable enthusiasm by both the laboratory specialists and technicians. The clinician as well has received much valuable information from this edition. It seems that all laboratory subjects were completely covered, however, in this new edition we find additional illustrations in black and white and 24 full page color plates; illustrations on the estimation of kidney function; description of newer concepts on nephrosis and nephritis; more recent data on origin and development of cells; more than 100 additional pages on hematology; new illustrations and text on parasitology and tropical medicine; information concerning the Black Widow Spider, and detection of crime by laboratory methods, and many other important facts in laboratory technique.

This is indeed a complete work and will be acceptable by everybody interested in laboratory technique, or the application of laboratory findings to clinical procedures.

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ABSTRACTS : REVIEWS : COMMENTS *and* CORRESPONDENCE

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from
LeRoy Long Clinic
714 Medical Arts Building, Oklahoma City

Fertility and Sterility after Extra-uterine Pregnancy by Mayo and Strassmann; Surgery, Gynecology and Obstetrics, July, 1938; Vol. 67, No. 1; page 46.

This is a report on 142 patients with ectopic pregnancies seen at the Mayo Clinic in the ten-year period, 1926 to 1935.

Of these, there was only one who died and she was admitted in shock and died before any surgical procedure was attempted. The remainder were operated upon without mortality.

One hundred of the 142 patients had the possibility of further pregnancy. Eighty-four of these 100 were traced and 31 became pregnant later. Of these 28 had intra-uterine pregnancies and three (3.6 per cent) had recurernt extra-uterine pregnancies. The 28 patients had 47 intra-uterine pregnancies with 32 full-time deliveries and the others resulting in miscarriage or premature delivery.

These authors have made a review of the literature, finding that recurrent ectopic pregnancies occur in about 3.9 per cent of the cases of ectopic pregnancy. Their figures of recurrence were in keeping with this one.

"Since the probability of intra-uterine pregnancy after one ectopic pregnancy is about 10 times larger than the probability of another ectopic pregnancy, conservative surgery is advisable in order to preserve fertility. Only if the other tube is severely diseased should it be removed. In this connection it should be kept in mind that the non-pregnant tube undergoes certain acute changes in more than 50 per cent of tubal pregnancies, such as swelling, redness, and peritoneal friction produced by hematomas. These changes, however, more or less disappear and do not interfere with subsequent fertility."

COMMENT: This is an interesting study and the last quoted paragraph is of great importance because of the soundness of judgment and experience drawn in these conclusions.

While it is to be expected that a group of patients seen at the Mayo Clinic would not represent those instances of tubal rupture with severe shock necessitating immediate emergency treatment, these figures as to the recurrence of ectopic pregnancy and as to the possibility of subsequent intra-uterine pregnancies are in keeping with series from other localities and hospitals.

Conservative surgical approach is certainly to be recommended in the care of this pelvic pathology as in all pelvic surgery.

Wendell Long.

The Persistence of Gonococcal Infection in the Adnexa by Studdiford, Casper, and Scadron; Surgery, Gynecology and Obstetrics; August, 1938, Vol. 67, No. 2, page 176.

This is a report of the bacteriological study of 24 patients which was undertaken "to determine, if possible, whenever the gonococcus is persistent in cases that are clinically and pathologically recognized as chronic salpingitis."

"Of this number 66.6 per cent were found to harbor gonococci in spite of the fact that none of them was in the acute stage of the disease." These findings are at variance with the older observations about the presence of gonococci in chronic inflammation of the uterine adnexa. These authors reviewed the literature and particularly call attention to the work of Curtis in 1921 in which 192 cases were studied and gonococci were not demonstrated in any case that did not at the same time reveal evidence of recent inflammation. Curtis, therefore, felt that the organisms were rapidly killed and that they were rarely recoverable in culture later than two weeks after the disappearance of fever and leucocytosis. Studdiford and his co-authors point out the fact that no competent bacteriological investigation has been carried on since that of Curtis and the present investigation is in direct variance with the findings of Curtis and others.

In one of Studdiford's cases it was most likely that the most recent infection took place at least 10 years before study. In another, fever therapy had apparently cured the local cervical infection, but the culture from the tube was positive. It was also significant that the gonococcus complement fixation tests were found to be frequently at variance with the results of culture.

The conclusions of the authors are quoted below since they are concise and to the point.

1. "Contrary to previous reports, the fallopian tubes may remain as active foci of gonococcal infection for long periods of time.

2. "Many cases regarded as acute exacerbations of chronic salpingitis may be due to recrudescences of residual infections rather than to reinfections.

3. "Gonococci may survive in the tube in the presence of turpentine and mineral oil.

4. "Gonococci may survive in the tube despite apparent cure of local cervical infection by hyperpyrexia."

COMMENT: This is an extremely practical subject and since the authors' results vary so greatly from that of the most recent investigation by Dr. Curtis in 1921, this rport is deserving of critical study.

The present series is far too small for any comprehensive conclusions and it is to be hoped that these authors will extend their investigation over a large enough series of patients so that they can draw conclusions with more assurance.

However, the work of Curtis in 1921 has been used as a basis for the therapeutic management of gonococcal infection in the uterine adnexa and it is entirely possible that a review of the bacteriology of chronic inflammatory disease of the uterine adnexa will influence to no small degree the treatment of this annoying but common condition.

It must be added that these findings do not justify any but conservative treatment in the initial attacks of gonorrheal infection in women. This applies equally to the subacute stages of inflammation due to gonorrheal infection.

Wendell Long.

Glomus Tumor. Report of a Case. By Charles P. Larson, C. M. and R. J. Bennett, Fort Stellacoom, Washington. Western Journal of Surgery, Obstetrics and Gynecology, November, 1938.

This is an interesting article about a rare tumor, benign in character, which has received definite study only within recent years.

The authors credit Masson, pathologist for the Western State Hospital, Fort Stellacoom, Washington, with a description of the true origin of the tumor, he having described the detailed histology in 1924.

The authors say, "the neuromyo-arterial glomus is a normal vascular anastamosis which is distinctive in that it is arteriovenous with no intervening capillaries and that it has a peculiar architecture which includes smooth muscle and nerve fibers." It appears that the glomus tumors are usually located on the extremities, particularly under the nails (subungual position). They are sometimes found in the skin of the extremities, and other parts of the body. The authors report a case in a man 49 years of age, an inmate of a hospital for the treatment of mental diseases, where the tumor was located "on the flexor surface of the right wrist just above the ends of the radius and ulna." It had been present for about 12 years and was noticed because of excruciating pain, particularly on stimulation. It was a pale blue nodule about 2 cm. in diameter. "On the medial side of the nodule there was a darker colored, bluish-purple elevation, pinhead in size which was the 'trigger point' of the tumor." When this point was irritated, it produced great pain.

In the case of this particular patient, the true character of the tumor had been overlooked for a long time because it was supposed that the complaint of the patient was probably of a psychotic character.

The tumor was removed by surgical operation. The following is the microscopic report: "The tumor was surrounded by a thick layer of connective tissue, but this did not completely encapsulate the nodule as newly formed vessels surrounded by glomus cells were found lying free on the outer edge. A large nerve trunk was seen entering one side of the tumor. The body of the glomangioma was made up of distorted blood vessels having large lumens of irregular sizes and shapes. These vessels were lined internally by endothelium and some of them possessed a smooth muscle wall while others showed only a mantle of glomus cells. Elastic laminae were entirely lacking in the arterial walls. The glomus cells were found arranged in four different ways: (1) closely packed together in the walls of the vessels intermingled with smooth muscle cells; (2) forming a mantle around an endothelial-lined sinus; (3) clumped together into large masses without a vascular lumen; (4) loosely arranged and separated from each other by a homogeneous eosinophilic material containing an occasional collagen fiber. The cells were polygonal to round in shape, having a deeply basophilic nucleus and a clear eosinophilic cytoplasm. Mitoses were absent but in areas where new canals were being formed the glomus cells were much larger and more embryonic in appearance. With Mallory's phosphotungstic acid hemotaxylin stain numerous nerve bundles and fibers were demonstrated both in the cavernous portions of the tumor and between the individual glomus cells. Normal appearing arteries having a smooth muscle wall and elastic laminae were also present." The authors report that all symptoms were relieved after the excision of the tumor, but it had been only about two weeks before the article was written, so that it is uncertain about the final result.

The authors comment as follows:

"1. The tumor possessed a 'trigger point' of nervous excitation.

"2. The patient, being psychotic, caused the symptom of pain in the tumor to be regarded by the attending physicians as psychoneurotic in origin.

"3. On stimulation the tumor enlarged to twice its normal size and became darker in color. As this coincided with the onset of the pain, we may assume that the dilatation of the glomic vessels was the factor which stimulated the nerve endings.

"4. The nonencapsulation of the tumor suggests that it grew not merely by pushing aside the surrounding connective tissue in a centrifugal manner, but by active infiltration and proliferation. This observation makes the possibility of recurrence a likely event in this particular case."

The authors report that only about 70 authentic cases have appeared in the literature.

LeRoy Long.

Acute Cholecystitis, The Results of Operation Within Forty-Eight Hours of the Onset of Symptoms; Henry F. Graham, and Milton E. Hoefle; Annals of Surgery; November, 1938; Vol. 108, No. 5; page 874.

During the past 10 years increasing interest has been shown in early operation for acute cholecystitis. However, the term "early operation," judging from various articles read, is used loosely by the various authors and seems to mean anything from early in the disease to soon after admission to the hospital, although the patient may have been previously ill at home for some days. These authors, in an effort to more definitely evaluate their results, have found it desirable to set a definite time and, for the purpose of this study, they chose the first 48 hours from the **onset** of the symptoms of the acute attack.

In a collection of 167 cases which were operated upon within 48 hours of the onset, there occurred six deaths, a mortality rate of 3:59 per cent. The authors were more concerned with the promptness of the operation than with the type of procedure, but cholecystectomy was the operation of choice in these cases, while cholecystostomy was reserved for the more critical cases.

They point out the fact that a cholecystectomy for acute cholecystitis is more difficult than one performed in the quiescent period. Several procedures which make for safety while doing operation in this stage are given. For instance, the authors prefer as a rule to remove the gallbladder from above downwards, controlling the bleeding from the liver bed by the pressure of a gauze pad and retractor. The cystic duct is carefully ligated, using traction toward the common duct instead of away from it. This prevents the possibility of pulling the cystic duct off accidentally at a lower level than was intended. If the cystic artery does escape and bleeds, they attempt to control this and secure a dry field by the use of a small angular retractor or the finger in the foramen of Winslow making pressure on the hepatic artery until the bleeding vessel has been clamped and ligated. When there is an oozing liver bed, that cannot be obliterated, they place a free omental graft with a few interrupted sutures.

It has frequently been said that acute cholecystitis is not like acute appendicitis, and that there is not the same necessity for prompt operative interference. The authors cannot agree with this statement. They graphically demonstrate their reason for disagreement with a table which shows the results in 100 consecutive cholecystectomies for acute cholecystitis on Dr. Graham's service at the Methodist Hospital in Brooklyn. This shows:

Acute cholecystitis operated upon within 48 hours—51 cases—two deaths—3.93 per cent.

Acute cholecystitis operated upon two to five days—27 cases—two deaths—7.40 per cent.

Acute cholecystitis operated upon five days or more—22 cases—five deaths—22.72 per cent.

Total mortality in 100 cases—nine deaths—9.0 per cent.

This shows that in their experience a delay of more than five days gives a high operative mortality, and raises the question of whether operation should be performed or delay advised. They feel that this decision must be made in the individual case. Also when an operation is done, the further question of what operation is indicated will always arise. Gangrenous and perforated gallbladders are seen within 48 hours after the onset of symptoms and it must be realized by surgeons generally that these conditions are not rare or unusual events. Most of the recently published series of cases of acute cholecystitis show an incidence of gangrene of about 20 per cent.

They quote a series by Pennoyer of Roosevelt Hospital in New York of 300 cases of acute cholecystitis in which the general policy was to delay whenever possible. Pennoyer's mortality was 10 per cent. This presents a striking contrast to the 3.59 per cent mortality in the cases operated upon within 48 hours of the onset and certainly seems to be a strong argument in favor of a determined effort to obtain these cases for operation within 48 hours.

They make the following statement: "It is difficult to see two sides to this question, when it is so evident that a lowering in mortality could be accomplished so easily by education of the laity and cooperation between the family physician and the surgeon to secure a prompt operation, early in the attack, for every person suffering from acute cholecystitis who is a proper operative risk."

LeRoy D. Long.

Regional Enteritis; Claude F. Dixon; Annals of Surgery; November, 1938; Vol. 108, No. 5; page 857.

The author feels that regional enteritis, terminal ileitis, or nonspecific granuloma of the intestine is either occurring more frequently or is being recognized more often than in the past. He reports a total of 69 patients with regional enteritis who have been treated at the Mayo Clinic.

The 14 cases reported by Crohn, Ginsberg and Oppenheimer, in 1932, gave the first classic description of what is known as ileitis, granuloma of the intestine, or segmental enteritis. In Crohn's original article he expressed the belief that this disease was confined to the ileum, but, in 1936, he and Rosenak reported a total of 60 cases, confirmed at operation, in nine of which there was involvement of some portion of the large bowel. It now seems certain, judging from reports by many others as well as from some of the cases in this series, that so-called terminal ileitis not infrequently involves the cecum and portions of the large intestine as well as the terminal ileum.

In this Mayo Clinic series the frequency of signs and symptoms encountered is interesting. The frequency and the order in which they occur in this series was as follows: Loss of weight 100 per cent; next in order came cramping pains, diarrhea, palpable mass (in 77 per cent), nausea and vomiting, anemia, external fistula, and blood in stools.

Dr. Dixon thinks that the rational treatment at the present time consists in resection of the diseased segment of intestine. A short-circuiting operation alone such as ileocolostomy often affords temporary relief and apparently, in isolated instances, may produce subsidence of all symptoms. A two stage operation, although impractical in some given cases, seems to be the procedure of choice because of safety. So-called spontaneous cures have been occasionally recorded but must be viewed with some skepticism.

Ulceration of the mucosa of the bowel and enlargement of the mesenteric lymph nodes may be the beginning of regional enteritis, and transillumination of the intestine may prove to be an aid in locating such early lesions. By placing a cold Cameron light behind the suspected segment of intestine and transilluminating it, one may be able to detect a small defect such as an ulceration or a polyp.

The etiology of regional enteritis is unknown. The concensus at present seems to place the cause of regional enteritis on an infectious basis. Up to the present time, however, studies of specimens which have been removed have failed to reveal a specific Bacterium as the cause of the disease. (A study of the literature on non-malignant disease of the intestines gives the impression that many such lesions have been incorrectly diagnosed as tuberculosis.)

It seems probable that when one is dealing with proved segmental enteritis, extensive recurrence of the disease is most likely to follow unless radical resection is carried out. Radical excision of the mesentery should be made if enlarged nodes are present.

Dr. Dixon feels (and I heartily agree with him) that the side-to-side anastomosis of the ileum to the transverse bowel is safer than end-to-end or end-to-side anastomosis which is done by many suregons.

LeRoy D. Long.

EYE, EAR, NOSE AND THROAT

Edited by Marvin D. Henley, M.D.
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Use of Sulfanilimide in Otolaryngology. Harry P. Schenck, M.D., Philadelphia. Archives of Otolaryngology, November, 1938.

An extensive historical and experimental survey is given in the beginning of this article. The entire article is about 50 pages in length and is quite the most complete publication on this drug that has yet been published. Long and Bliss concluded that about 48 hours is the time elapsed before the maximum therapeutic effect is obtained. In far advanced infections or practically moribund patients spectacular results cannot be expected. "In man, absorption of sulfanilimide is apparently complete from the gastrointestinal tract in four hours." The initial and maintenance dose are discussed. The opinion is expressed that sulfanilimide by injection is not necessary except in cases of nausea, etc., because it produces no higher concentration in the blood than by oral administration alone. As soon as clinical improvement is noted, the dose of the drug should be decreased; if there is no clinical improvement and no untoward side effects are noted, then the dose of the drug should be increased. In recurrence of the same infection, increased dosage is indicatd. The above investigators suggest: "that in cases of severe infection in which the immediate prognosis is grave both parenteral and oral administration of sulfanilimide may be used; for moderately severe infections either parenteral or oral administration may be employed; for mild or relatively chronic streptococcic infections, oral administration alone is adequate and frequently one-half to two-thirds the estimated dose is effective.

Some toxic manifestations are weakness, dizziness, tinnitus, lassitude, anorexia, general malaise, nausea, cyanosis, sulfhemoglobinemia and fever. Deaths have been reported repeatedly following the use of sulfanilimide. The administratoin of magnesium sulfate in conjunction with sulfanilimide is contraindicated because of the combination removing from the blood sulfhemoglobin and

methemoglobin. Sulfhemoglobin "could be detected six weeks after the administration of sulfanilimide ceased, while methemoglobin disappeared in about 24 hours."

Pharyngitis and tonsillitis show a favorable effect when the infection is due primarily to hemolytic streptococci; the temperature becomes normal in a few hours to three days but the streptococci persists in the cultures for as long as four or five weeks. Streptococcus viridans is affected little, if any. Some report no better effects than from the use of sodium salicylate.

Vincent's Infection shows no effect from sulfanilimide topically or orally.

Ludwig's Angina: One author reports a case of a three-year-old child apparently cured by sulfanilimide: two other authors report two deaths in 20 and 35 hours after beginning treatment with sulfanilimide.

Other oral infections such as "dry socket," osteomyelitis of the mandible, peridontal and periapical infections, stomatitis aphthosa, subperiosteal abscess, parotitis and various other similar infections are reported to be favorably influenced by the giving of the drug.

Adenitis-suppurative seems not to be influenced by this drug but non-suppurative adenitis is acted on favorably.

Otitis Media: Watson-Williams are of the opinion that sulfanilimide is of definite value. Pediatricians in general seem to feel that there are fewer mastoid complications following a middle ear infection.

Mastoiditis: Especially of value in those cases where there is a meningeal irritation present. Basman and Perley note that "the outstanding feature of sulfanilimide therapy in the treatment of mastoiditis is the smooth post-operative course with lack of complications."

Otogenic Meningitis: "The most convincing evidence of the effectiveness of sulfanilimide therapy in man has accrued from the clinical observations in cases of beta hemolytic streptococcic meningitis." The effect on staphylococcic infections is a moot question.

Pneumococcic Meningitis: The application here has not been widespread. The reports from various investigators are not uniform.

Other types of meningitis such as Bacillus proteus and influenza bacilli also show conflicting reports from different men.

Meningococcic Meningitis: One advantage of the sulfanilimide here over the anti-meningococcus serum is the absence of intraspinal and intravenous therapy, the danger of protein shock and the discomfort of serum sickness. The majority of reports concur in its efficacy here.

Absecess of the Brain: Two cases are reported with recovery with the use of sulfanilimide.

Cavernous Sinus Thrombosis: A case with a clinical picture of cavernous sinus thrombosis is reported with recovery with the giving of sulfanilimide.

Bacteremia: "Sulfanilimide appears to be strikingly effective against the types of bacteremia due to the beta hemolytic streptococcus, the meningococcus and, to some extent, the pneumococcus. It is ineffective against Str. viridans and the staphylococcus."

Erysipelas: The results are favorable—gives a reduction of the incidence of complications and diminishes the tendency to recur.

Infection of a wound due to hemolytic streptococcus reacts favorably to this therapy.

Infection of the Sinuses: Few reports are available but the majority of those available report favorably on the action of the drug.

The article closes with discussion of the use of sulfanilimide in other diseases such as acute rheumatic fever, tularemia, acute infectious mononucleosis, lymphatic leukemia, and post-traumatic gangrene (gas).

Nature of the Filtrable Agent of Trachoma. Phillips Thygeson, M.D., and Polk Richards, M.D. (Digested from the Archives of Ophthalmology, October, 1938.) Published in the Digest of Ophthalmology and Otolaryngology, Vol. 1, No. 2, December, 1938.

"It is now generally agreed that none of the bacteria found on trachomatous conjunctiva are the cause of the disease. It has, however, been demonstrated that the causative agent of trachoma is filtrable, has the characteristics of a virus and that it is identical with the elementary body of Halberstadter and von Prowazek. The available evidence indicates that the agent of trachoma is located in the epithelium of the conjunctiva, and the material yielding active filtrates contained substantial numbers of epithelial inclusions.

Halberstadter and von Prowazek noted bodies which they thought were the cause of the disease both free in the secretion and as inclusions in the cytoplasm of epithelial cells. A number of workers accepted these bodies as etiologic agents, but the evidence has been insufficient to gain universal acceptance, although the inclusion bodies are recognized as the most characteristic microscopic evidence of the disease.

Elementary bodies from epithelial scrapings (Giemsa-stained) from persons with active trachoma were seen as minute, sharply defined, reddish blue bodies having a diameter of about 0.25 micron. There are no morphologic differences between them and the elementary bodies of vaccina or molluscum contagiousum, but they differ in staining qualities. They are almost identical in both morphologic structure and staining with the granules of inclusion blennorrhea and psittacosis.

It is believed that the elementary bodies of trachoma are virus bodies like those of psittacosis and inclusion blennorrhea and except in staining qualities, to typical virus elementary bodies, such as those of vaccinia, fowl-pox and molluscum contagiousum. The examination of Giemsa-stained epithelial scrapings from 1,700 persons with conjunctivitis showed elementary bodies of Halberstadter and von Prowazek only in persons with inclusion blennorrhea and trachoma.

Filter tests showed that no elementary bodies were demonstrable in either trachomatous material or molluscum contagiousum after passing through Berkefeld V filters under ordinary conditions, but with Elford membranes 0.6 micron pore diameter elementary bodies were demonstrable in both. An inoculation experiment upon a human volunteer with material which had been passed through an Elford graded collodion membrane of 0.6 micron average pore diameter although free from bacteria produced typical trachoma.

Since the elementary bodies of trachoma and inclusion blennorrhea are indistinguishable by morphological or clinical means, epidemiologic data were used to differentiate the two. Inclusion blennorrhea has a low degree of communicability, does not become epidemic, and cases in adults are rare. Inclusion blennorrhea has not been reported in many localities where trachoma is of common occurrence. Rotth observed that inclusions are not found in inclusion blennorrhea after the first few months, whereas trachoma inclusion bodies are present over a period of years.

Elementary bodies are found in practically all cases of active trachoma, the number decreasing proportionately with the degree of activity of the disease. In cases of cicatricial and healed trachoma they were usually absent. In those of over 10

years duration which were undergoing acute exacerbation inclusion bodies and free elementary bodies were found in large numbers. Experiments indicated that the bodies develop in the epithelial cells when transferred to monkeys and to one human volunteer.

The virus of trachoma apparently cannot be cultivated by ordinary methods. It is difficult to demonstrate elementary bodies in patients who have extensive treatment. A test upon 10 cases was made to determine the effect of sulfanilimide treatment with the result that after 15 days of treatment no inclusions were found.

The Diagnosis and Treatment of Meniere's Disease. S. H. Mygind and Dida Dederding, Copenhagen. Annals of Otology, Rhinology and Laryngology, September, 1938.

Mentioned in the differential diagnosis are: collateral labyrinth edema; middle ear catarrh and tubal stenosis; neuro-labyrinthitis; otosclerosis; intracranial affections such as epidemic encephalitis, disseminate sclerosis, cerebral tumor, and acoustic nerve tumor.

The examination of these patients should include the otologist, the internist, the neurological and the ophthalmological inspection and examination of the cerebrospinal fluid.

Very little medication is advocated by the authors, either in the acute attack or in the treatment proper. The aim of the treatment is to reduce the intake of fluid and the consumption of salt. Their routine of so doing is outlined. An exact dose or amount of liquids and salt is not given, but the patient is observed very closely for some time and his daily habits as to food are recorded and then he is put on their schedule. If possible it is best to hospitalize these patients for about a month until they learn their routine thoroughly. Daily intake and output of fluid is measured. If the weight is too high or too low this is controlled by the proper foods. Care is taken that there is not a deficiency of vitamins or calcium. The aim is "to empty the abnormal water depots in the ear and elsewhere." It is also important to ward off factors that tend towards this retention. Stimulation of circulation in the skin, muscles and lungs is advocated. Irradiation with a carbon arc light is used for this purpose. Other forms of physiotherapy are used advantageously. These must be used cautiously at first, increasing in length and severity only when it is known that the patient tolerates it well. "On the whole it is essential not to overdo the treatment but to apply a suitable mixture of stimulation and rest during cautious training."

The authors question Gothlins suggestion that a C-Avitaminosis is a frequent cause of Meniere's disease.

Local treatment of regular catheterization of the eustachian tube is recommended, for prevention of stenosis as well as for mobilization of the auditory ossicles. The content of the labyrinth may also be influenced by this manipulation via fenestrae.

After a month's hospitalization and three to six months on the routine out of the hospital the patient is allowed to resume his ordinary means of living. The giddiness is many times cured and the hearing improved. At the end of three years 81 per cent of the patients treated were still permanently free from giddiness. The series treated included 157 patients. Sixty-one patients showed improvement in hearing during the time of treatment. At the end of three years about half of these said their improvement in hearing was permanent. These results might be termed as satisfactory.

"Isolated cases defy all treatment, but in the majority of cases the bad result must be ascribed partly to inefficient control of the patient and partly to insufficient individualization of the treatment. What matters is to find out the combination of casual agents, exogenous and endogenous, physical and psychical, which are at the bottom of each individual case."

INTERNAL MEDICINE

Edited by Hugh Jeter, M.D., 1200 North Walker, Oklahoma City

Histologic Study of the Endometrium During Pregnancy. Albert C. Broders and John R. McDonald. Section on Surgical Pathology, The Mayo Clinic, Rochester, Minnesota. (American Journal of Clinical Pathology, September, 1938, Vol. 8, No. 5.)

It has been known since 1899 when Opitz stated that endometrial glands undergo certain changes during pregnancy. He found that early in pregnancy the glands form papillary processes which projected into the lumens and that the intervening stroma was scanty. Later in the course of pregnancy, the papillary projections and greater part of the epithelium disappear and the glands are lined by one layer of cells. It is thought that decidual tissue is present in the uterus in all cases of ectopic pregnancy but this author did not find it present in all cases.

The findings are based on the study of the endometrium in 111 cases of intra-uterine pregnancy, 27 cases of extra-uterine pregnancy and two cases in the agravid uterus. The menstrual cycle is divided into early and late proliferated phases and differentiative phases. The results are as follows: In the 111 intra-uterine cases, 99 showed either decidual formation changes or endometrial glandular changes. The glands were most typical in cases where the decidual formation was minimal. Therefore, the glandular changes are comparable to the late differentiative phases of the menstrual cycle and occur in early pregnancy.

In 27 cases of extra-uterine pregnancy, 11 cases revealed typical decidua or glands of pregnancy or both and correspond to the late differentiative phases or early pregnancy.

In two cases of agravid uteri, one showed glands of pregnancy and was comparable to the late differentiative phase.

Conclusion:

1. The endometrial glands are present in a large proportion of cases of early pregnancy, a smaller number of extra-uterine pregnancy and occasionally in agravid uteri and that these glands have the same significance as decidual tissue.

2. The endometrium usually shows late differentiative phases in early uterine pregnancy. It is less common in extra-uterine pregnancy.

The Early Diagnosis of Acute and Latent Plumbism. Frederick L. Smith, 2nd, Thomas K. Rathmell and George E. Marcil. (American Journal of Clinical Pathology, September, 1938, Volume 8, Number 5.)

In this the authors evaluate the laboratory findings in cases of absorption into the body of a substance which in excessive amounts may cause an acute toxic condition, or produce such an effect at a later date by its accumulation in the body and its subsequent release due to a lowering of a normal tolerance and some uncontrollable change in the equilibrium of physiological and biological factors. Especial attention is given to the early diagnosis of acute and latent plumbism although the differential diagnosis is well discussed.

Further, in this, the authors present a diag-

nostic procedure for all types of lead intoxication, including incipient, latent, acute and chronic phases of the disease. This procedure is based upon the lead content of the serum, cells and fibrin fraction and whole blood from the patients.

The authors maintain that a differentiation could be made between any stage of lead poisoning and other pathological conditions in which the clinical signs and symptoms might be confused with those of lead toxics. In addition to the diagnostic procedure the authors have followed the progress of cases of plumbism by daily shiftograms and hemograms and by making additional lead blood analyses when hemographically or clinically indicated.

The range of lead values for the healthy normal individual is given and appears to be independent of sex, age, climatic conditions, daily fatigue, violent exercize, meals, menstruation and ovulation.

The authors in this paper point out that the lead anemia is due to abnormal destruction of red blood cells in the circulating blood and not due to a diminished production of blood, except in the last stages of plumbism when a degeneration of the bone marrow may occur. The chief characteristics of the immature cells is the presence of a basophilic substance and this may be produced by many substances such as lead, arsenic, Benzol and the effects of high altitudes. The authors conclude that stipple cells are not pathognomonic of plumbism but are present and increase in many other diseases. They maintain that the stippling of red blood cells may occur whenever the productions of red blood cell destruction are retained in the body.

Many interesting tables are presented including (1) clinical signs and symptoms of plumbism with differential diagnosis, (2) relation of basophilic stippling, reticulocyte count and basophilic aggregation to the development of clinical symptoms in acute, chronic, and induced plumbism, (3) leukocytic shifts during the various stages of plumbism, (4) lead content of the blood of healthy and normal individuals, (5) distribution of lead in the blood associated with pathological processes other than plumbism, (6) distribution of lead in the blood during acute lead poisoning and active periods of chronic plumbism and (7) the distribution of lead in the blood during periods of acute exacerbation of plumbism and the relation to clinical crisis.

In summary, the authors present a diagnostic procedure pathognomonic for lead in any of its clinical forms and manifestations.

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PLASTIC SURGERY

Edited by
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A Principle To Be Considered In Transplanting Costal Cartilage for Repairing Deficiencies of the Nasal Skeleton. Forrest Young, M.D., Rochester, N. Y.

The author has called attention to a new principle not commonly used in the reconstruction of the nasal skeleton. Instead of using the long strut of cartilage along the dorsum together with the hinged section for the septal portion, he recommends using a section of cartilage shaped in such a way as to simulate not only the septum but also the alar cartilages.

The author states in his operative technique procedure, that the method which he has gradually evolved in a rather crude attempt to replace not only the dorsal edge of the septal cartilage but the alar cartilages as well. Instead of placing a long strut of cartilage along the dorsum, appropriately shaped to fill in the depression, as is the usual practice, a section of costal cartilage is removed with its perichondrium intact. This section is selected with the curve or straight line desired for the dorsal like of the nose. If a columellar support is needed, the first cut provides for a vertical post hinged to the main mass. Parallel longitudinal cuts are made on the edge opposite that selected for the dorsal ridge. These cuts go down or almost to the perichondrium and the thin wings are fractured outward so that they remain hinged by perichondrium. The median mass is thinned and shaped to a pattern previously determined from a cast of the face upon which the desired nose has been built in clay and half removed. The wings are thinned and shaped.

Modeling such a transplant we believe is superior to the usual cantilever strut. If carried out according to indications and well conceived preoperative plans, it produces more normal appearing side walls of the nose and allows a larger airway below, because the nasal lining is not held downward by a large mass of cartilage designed merely to rest upon it in its depressed position.

The author favors autogenous cartilage. He advises against rubber, paraffin, celluloid and metals.

COMMENT: The author presents a very well written as well as completely illustrated technique for his new principle. Part of this plan has been suggested by Gillies and McIndoe.

From the description of the author's technique together with his end results as shown, he has evidently a worthwhile principle.

Total Reconstruction of the Auricle. Earl C. Padgett, Kansas City, Mo. S. G. & O., December, 1938.

The author has worked out a technique for total reconstruction of the auricle. It is well known that this operation has always been particularly difficult, the end results have often been discouraging.

Reasons for reconstruction of auricle: (1) to promote economic efficiency, (2) to alleviate a psychiatric defect, and (3) to give personal satisfaction. The prejudiced attitude of employers and associates often promotes an economic impasse. Whipping the defense reaction against the onslaught of a cruel environment is not a pleasurable pastime even if one is capable of such a reaction. But if one be so unfortunate as to fail in readjustment and the negative surmounts the positive ego, inadequacy to environment follows. The knowledge that one is presentable socially may be a great boon to a sensitive, tried and sore spirit. Therefore, it cannot be said that an adequate procedure which tends to abrogate these reactions, even without other objectives, does not entail in its accomplishment a beneficent craft.

The author presents a plan which he states can be done with safety in three stages, hospitalization not to exceed three weeks.

Material Required: The author uses cartilage from the patient and trims the material to the shape of the helix and anti-helix. These sections are then buried under the skin of the scalp at the level of the opposite ear. He then fashions a flap on the neck, the posterior part of which is tubed to make the rim of the auricle and the bulk is used to cover the raw surface behind the reconstructed ear.

The technique is carefully described so that it can be followed without difficulty.

The indications for the operation are considerably different in the female than in the male. The female can, if she wishes, hide the missing auricle or a deformed one with her hair. Before an attempt is made to reconstruct the auricle, the individual should have attained his full growth, first, because one uses the size of the opposite ear as a

pattern and, second, because if the individual has not attained an adult age, the reconstructed ear will not become larger while in all probability the opposite one may grow somewhat.

Requirements and causes of failure: The requisites for good imitation of the normal ear are correct size, similar outline, nearly equal divergent angle from the head, the same relative height and the same position in an anterior posterior direction and that the new auricle retain its size and shape more or less permanently.

In attempts to reconstruct the auricle satisfactorily, the causes of an unsuccessful outcome, barring infection or failure of the material used for structural support to remain imbedded within the tissues without reaction, have been: (1) the inability to obtain structural support of the proper shape and size, (2) the failure to obtain adequate covering of the proper thickness, texture, color, (3) difficulty in maintaining the new auricle at an upright level in comparison with the opposite ear, (4) the development of an improper divergent angle of the auricle from the head, and, finally (5) a tendency for folding, shrinkage, and dimunition in size. When one of these stumbling blocks to success was present, the new auricle could not be considered a glaring success but if more than one or all were present, the qualitative result was decreased progressively, in accordance with the degree of the enumerated defects.

The author suggests that on formulating a plan one should err on the side of too much ear than too little ear, both as to cartilagenous as well as to soft tissue requirements. The flaps should be larger than necessary as it is easier to discard than to go after more tissues.

This in recapitulating the author says: The following desiderata are important: A sufficient amount of soft tissues; a type of soft tissue which can be molded to give certain contours that cannot be given by rigid tissues; a sufficient amount of rigid tissues; rigid tissue of a size and shape which simulates most of the larger basic contours of the auricle; the rigid tissue that is more or less permanent; a rigid tissue that is easy to transplant; will stand trauma; maintenance of the proper elevation and preservation of the proper divergent angle from the head.

The author mentions two types of deformity which present in reconstruction: The congenital rudimentary or absent auricle and the individual in whom some trauma or disease has destroyed the auricle. The author states that he has had 86 cases of congenital absence or defect of the auricle. He presents very well the first, second and third stages of the operative procedure with illustrations.

In the four individual cases which are herein presented the defect in two instances was of congenital origin. The oldest of these was built in 1928. At the present time the shrinkage has been only slight. The other congenitally malformed ear was constructed in 1933. Case two suffered traumatic destruction of the auricle. It was built in 1932. Case four following the application of a 'cancer paste' had suffered almost total destruction of the auricle along with the soft structures about the ear. The depth and extent of the slough may be appreciated when it is noted that the patient had a seventh nerve paralysis because of it. The base upon which the new ear was to rest was repaired and the new auricle was rebuilt in 1936.

The operation presented is one developed from an experience which necessarily entailed some trial and error.

COMMENT: The total reconstruction of the auricle has been tried by many surgeons, the results of most have been somewhat unsatisfactory. Dr. Sheehan sometimes uses the cartilage of the mother which is buried under the skin of the child in order to make an auricle. The mother subsequently covered her ear region by her manner of hair dress.

The author is to be complimented and congratulated on his clear cut description of this operation.

UROLOGY

Edited by D. W. Branham, M.D.
514 Medical Arts Building, Oklahoma City

Facts Behind the Laws. Mary S. Edwards, Statistician, American Social Hygiene Association. Journal of Social Hygiene, November, 1938.

The following facts have been gleaned from this article and may be interesting to the profession in view of the approach of the legislative year.

1. Over 95 per cent of syphilis infections are due to sexual contact.

2. Approximately five per cent of all men, women and children (1,650,000 persons) in this country are afflicted with syphilis. Dr. Thomas Parran states he has estimated one in ten adults are stricken with syphilis during his or her lifetime.

3. Seventy-five per cent of infections are contracted before 30 years of age, which brings this group within the marriagable age and the age of the greatest frequency of child bearing. According to the United States Public Health Service 1,000,000 woman who may become mothers have syphilis.

4. Each year 60,000 babies are born with congenital syphilis; one-third of these will suffer from total or partial loss of vision and a considerable percentage will develop mental disturbances or various bone and skin deformities. Less than half of these treated will show satisfactory results.

5. Congenital syphilis is practically 100 per cent preventable if the mothers infection is diagnosed and treated before the fourth prepartum month.

6. A positive Wassermann is usually the only evidence of the disease.

A careful consideration of such facts throw overwhelming weight on the side of carefully written adequately administered and properly understood laws to prevent syphilis in marriage and in unborn children.

Studies on Cystocele and Urinary Incontinence In The Female by Use of Cystograms and Urethrograms. J. Duane Miller. Journal of Urology, November, 1938.

The author has written an excellent article incorporating many illustrations of cystograms and urethrograms in the various deformities incident to perineal pathology occuring in women.

He states that:

Cystograms in the antero-posterior and oblique views in the dorsal, erect and erect straining positions have yielded information valuable in the selection of operative procedure for repair of individual cases of cystocele. They have also served as a method for the evaluation of the repair.

Urethrograms have proved an aid in the investigation into the causes of incontinence and residual urine and have indicated the need, during repair, for special attention to—narrowing the bladder neck and urethra, correcting injuries to the M. trigonalis, and/or providing adequate fixation at the level of the internal sphincter.

Urethrograms may furnish the clue to diagnosis in some cases of chronic urethritis.

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Meeting Place, Oklahoma City, May 1, 2, 3, 1939.

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International Post-Gradnate Medical Assembly

Following is the program of the International Post-Graduate Medical Assembly of Southwest Texas, to be held at San Antonio, Texas.

Data on the meeting:

1. Dates: January 24, 25, 26, 1939.
2. No registration fee for doctors living outside of Bexar county.
3. Complimentary stag smoker, Tuesday night, January 24.
4. Dutch treat dinner-dance, Wednesday night, January 25.
5. Public health lectures, January 25.
   Topics: Dr. J. A. Myers on Tuberculosis.
   Dr. Karl A. Menninger on Insanity.
6. Short trip into northern Mexico for the guest speakers.

Guest speakers:

Dr. Fred L. Adair, University of Chicago.
Dr. G. H. Belote, University of Michigan.
Dr. Russell L. Cecil, Cornell University.
Dr. James B. Costen, Washington University.
Dr. Harry S. Gradle, Northwestern University.
Dr. D. Nelson Henderson, University of Toronto.
Dr. Arthur E. Hertzler, University of Kansas.
Dr. Roy R. Kracke, Emory University.
Dr. W. Russell MacAusland, Tufts Medical College.
Dr. Karl A. Menninger, The Menninger Clinic.
Dr. J. A. Myers, University of Minnesota.
Dr. Howard C. Naffziger, University of California.
Dr. H. G. Poncher, University of Illinois.
Dr. Alexander Randall, University of Pennsylvania.
Dr. Charles G. Sutherland, Mayo Foundation.
Dr. Ismael Cosio Villegas, National University of Mexico.

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Report of Licenses Granted to Practice Medicine

NAME	Year of Birth	Place of Birth	School of Graduation	Year of Graduation	Permanent or Present Address
Raines, Morris McKay	1914	Enid, Okla.	Oklahoma University	1937	Hinton, Okla.
Hollingsworth, Rob't. S.	1911	Springfield, Mo.	Oklahoma University	1937	Decatur, Ill.
Loughmiller, Robert Farris	1912	Oklahoma City, Okla.	Oklahoma University	1937	Oklahoma City, Okla.
Hamra, Henry M.	1913	Henryetta, Okla.	Oklahoma University	1937	Henryetta, Okla.
Van Hoesen, Daisy G. (F)	1910	El Reno, Okla.	Oklahoma University	1937	Weehawken, N. J.
LaFon, William F.	1913	Edmond, Okla.	Oklahoma University	1937	Wichita, Kansas
Stuard, Charles Goodson, Jr.	1909	Waurika, Okla.	Oklahoma University	1937	Kansas City, Mo.
Baumann, Milton Charles	1911	Springfield, Ill.	University Illinois	1937	Ada, Okla.
Deutsch, Harry Louis	1911	Steger, Ill.	University Illinois	1938	Stilwell, Okla.
Doudna, Hubert Eugene	1904	Lake City, Mich.	University Illinois	1930	Lake City, Mich.
Ewell, Wm. Carl	1909	Welty, Okla.	University Arkansas	1937	Tulsa, Okla.
O'Brien, John Emmet	1896	Burlington, Vt.	University Vermont	1923	Rutland, Vermont
Perry, James Hardin	1912	Canadian, Texas	Univ. Tennessee	1937	Healdton, Okla.
Piatt, Arnold David	1909	Columbus, Ohio	Ohio State Medical	1933	Tulsa, Okla.
Puckett, Howard Louis	1903	DeKalb Co., Tenn.	Univ. Michigan	1931	Stillwater, Okla.
Tuttle, Arthur Dale	1904	Kansas City, Mo.	Col. Med. Evangelists	1935	Weatherford, Okla.
Walker, William Kenneth	1909	Weleetka, Okla.	Baylor University	1936	Marlow, Okla.
Bond, Ira T., Jr.	1900	Rush Springs, Okla.	Oklahoma University	1927	County Line, Okla.
Hammond, Jas. Harold	1911	Edmond,Okla.	Oklahoma University	1937	Oklahoma City, Okla.
Berry, John Curtis	——	Washington, Okla.	Oklahoma University	1937	Norman, Okla.
Dyer, Isadore	1909	New Orleans, La.	Tulane Med. School	1933	Tahlequah, Okla.
Hassler, Ferdinand Rudolph	1901	Pittsburgh, Pa.	Oklahoma University	1937	Muskogee, Okla.
McBride, Ollie	1902	Lexington, Okla.	Oklahoma University	1937	Ada, Okla.
Royer, Charles Abraham	1907	Coffeyville, Kans.	Kansas University	1932	Alva, Okla.
Kaelser, William Henry	1906	Buck, Okla.	University Illinois	1936	McAlester, Okla.
Wilson, Charles Hugh	1911	Oklahoma City, Okla.	Oklahoma University	1937	New Rochelle, N. Y.
Wells, Lois Lyon (F)	1894	Selma, Calif.	Vanderbilt Univ.	1935	Oklahoma City, Okla.
Battenfield, John Y.	1912	Pryor, Okla.	Oklahoma University	1937	Muskogee, Okla.
Dargatz, Fred Edward	1886	Osborne, Kans.	U. Kansas City Mo.	——	Ardmore, Okla.
Zampetti, Herman Anthony	1910	Wilkes-Barre, Pa.	Creighton Univ.	1937	Drumright, Okla.
Tidwell, Robert A.	1913	Miami, Okla.	Oklahoma University	1937	Detroit, Mich.
Browning, Robert Leroy	1883	——, Ala.	Birmingham M. Col.	1911	Pawnee, Okla.
Calef, Victor	1913	Alexandria, Egypt	St. Louis Univ.	1937	Enid, Okla.
Tracewell, George Logan	1909	Valentine, Nebr.	University Nebraska	1935	Okmulgee, Okla.